THE OLD TIMER'S BULLETIN

OFFICIAL JOURNAL, ANTIQUE WIRELESS ASSOCIATION, INC.

Published for the Collector, Historian and Old Time Wireless Operator

VOL. 33 AUGUST 1992 NO. 3

ANTIQUE WIRELESS ASSOCIATION, INC.
BOX 637
PENN YAN, NEW YORK 14527

The "Old Timer's Bulletin": The AWA Journal

The Old Timer's Bulletin is published approximately four times a year by and for members of the Antique Wireless Association, Inc., a nonprofit historical society founded in 1952 and chartered by the State of New York.

The Old Timer's Bulletin is available only as part of AWA membership. Its issuance is subject to change from time to time as to frequency, content, and size. This publication does not accept paid advertising. It is not liable in any way for any buying and selling transaction entered into as a result of its contents.

OFFICERS
President: Bruce Roloson
1st V. P.: Richard Ransley, WA2TLR
2nd V. P.: Bill Fizette, K3ZJW
Secretary: Joyce Peckham
Treasurer: Dexter Deeley
Curator: Bruce Kelley, W2ICE
Attorney: Sherwood Snyder, W2KFU

DIRECTORS
Art Albion
Larry Babcock
Charles Bliley, K3NAU
Dexter Deeley
Chris Fandt, WB2WAO
William Fizette, K3ZJW
Glen Fuller, N2EXL
Edward Gable, K2MP
Bruce Kelley, W2ICE
Arthur Kelly, W2ROB
Russell Maurer
Henry O'Meara, WB2NRX
Joyce Peckham
Lauren Peckham
Mani Pires
Richard Ransley, WA2TLR
Bruce Roloson
Roland St. Louis, K2LKH
Ludwell Sibley, KB2EVN
John Ward, KE2ST
John Wenrich, K2RY
Morgan Wesson

OTB STAFF
Editor: Ludwell Sibley, KB2EVN
Contributing Editors:
Amateur Radio Activities: John Ward, KE2ST; Bud Hall, K2LP
Book Reviews: Bruce Kelley, W2ICE
Comm. Receivers: Bill Fizette, K3ZJW
Early Eqpt. Profile: Lauren Peckham
Historical Artifacts: Dick Ransley
In House: Bruce Kelley, W2ICE
Key & Teleg.: Lou Moreau, W3WRE
Loudspeaker: Floyd Paul, W6THU
Meet the Collectors: Rodney Schrock, KD3OR
Museum News: Bruce Kelley, W2ICE
New Members: Joyce Peckham
Obituaries: Charles Griffen, W1GYR
Restoration: Ludwell Sibley, KB2EVN
Transistor Receivers: Norm Smith
Vacuum Tube: Bro. Pat Dowd, W2GK

CONFERENCE COMMITTEE
Chairman: Bill Fizette
Programs: Lauren Peckham
Auctions: Bruce Roloson & Ed Gable
Equipment Contest: Ralph Williams
Registration: Joyce Peckham
Photos: Richard Ransley

HONORARY MEMBERS
George Batterson, W2GB
Gioia Marconi Braga
Charles Brelsford, K2WW
Anthony Constable
Grote Reber
Elliot Sivowitch

REGIONAL MEETING REPS
Arizona: Chuck Brelsford, K2WW
California: Floyd Paul, W6THU
Canada: Fred Hammond, VE3HC
Florida: Norm Smith
Indiana: Ross Smith
Massachusetts: Bud Hall, K2LP
New Jersey: John Richardt, W2WIY
New York: Lauren and Joyce Peckham
North Carolina: Ron Lawrence
Pennsylvania: Mel Comer
Rhode Island: R. Merriam, W1NTE
Texas: C. F. Crandell
Washington: Warren Green, W7JY
Wash. DC area: Mike Feher, N4FS

AWARDS ADMINISTRATORS
AWA Houck Awards: Robert Merriam
BK-OTB Award: Bill Denk
Equipment Awards: Ralph Williams
Taylor Award: Ross Smith
Tyne Award: Lauren Peckham

WHOM TO CONTACT: (Write legibly. Enclose an SASE for prompt reply.)

Official business: Bruce Roloson (President), Box 637, Penn Yan, NY 14527.

Annual Conference: William Fizette, RD 1, Box 55, Henryville, PA 18332.

Want ads, information on regional and joint meetings: Richard Ransley (First Vice President), Box 41, Sodus, NY 15441.

Museum operation, book reviews: Bruce Kelley, 59 Main St., Bloomfield, NY 14469.

Bulletin material (except ads or book reviews); orders for back issues or the AWA Review: Ludwell Sibley (Editor), 44 E. Main St., Flemington, NJ 08822, (908) 782-4894.

Financial reports: Dexter Deeley (Treasurer), 8 Briar Circle, Rochester, NY 14618.

Dues and address changes: Joyce Peckham (Secretary), Box E, Breesport, NY 14816, (607) 739-5443. Dues (make check payable to AWA): 1 year, $12; 2 years, $22; overseas (airmail), $15.

AWA NETS (EDST)

PHONE

Sun. 7247 kHz SSB, noon (NCS: N4FS)
3837* kHz AM, 7 PM summer, 5 PM winter (NCS: W2ICE)

Tues. 14274 kHz SSB, 2:30 PM (NCS: varies)
3837* kHz SSB, 8 PM (NCS: N4FS)

Mon.-Wed.-Fri. 3867 kHz, 9:30 AM (NCS: W2ICE)

* Go up 5 kHz if QRM is present.

CW

Daily at 4 PM; first Wed. of each month at 8 PM
3586 or 7050 kHz (NCS: varies)

2-M REPEATER (Rochester area)

Mon. 7:30 PM, Receive: 146.820; Transmit: 146.220 (NCS: W2ICE)

CONTENTS

NEWS AND EVENTS

AWA News 4
IHRS Spring Meet
Larry Babcock and Ross Smith 8
ARCA Convention - Lauren Peckham 9
AWA Rochester Conference 29

FEATURES

Theatrophone - Jack Davis 10
Introduction to Collecting Early Receivers -
Bruce Kelley, W2ICE 12
A Silvertone 1670 - Leonard Aquilino, Jr. 14
"The Voice of the Prairie": A Brief History of W. W. Grant (1982-1968)
Dr. Robert P. Murray 16
Music Master Horns -
Floyd Paul, W6THU and Alan Douglas 20
Famous Men of Radio and Their Not-So-Famous Inventions - David Kraeuter 24
The Value of QSTs - Bruce Kelley, W2ICE 28
Restoring Weak Magnets - D. K. Owens 39
The Quadruplex -
Don De Neuf, WA1SPM, and Ludwell Sibley 41
"The Manufacturer Reserves the Right . . ."
Bob Haworth, W2PUA 42
A Short-Wave Crystal Tuner
Henry E. Johnson, K4PIY 43
WJAR in Providence, Rhode Island
Leonard Arzoomanian 44
8MK, Detroit, October 1921 46
Model Test Car in FCC Museum 47
The Radio Boys Visit Nova Scotia
Walter Bollinger, AF3V 60

DEPARTMENTS

Europe on One Tube - Meet the Collectors 23
De Forest Spherical Amplifier
Jerry Vanicek - The Vacuum Tube 26
Obituaries 27
In House 27
The Mailbag 34
1992 OT Contest - Amateur Radio 35
Substituting for 01As - Equipment Restoration 38
Code-Speed Contests - Key and Telegraph 40
New Members 49
Want Ads 53
Book Reviews 57
Museum News 59
The Museum ..... Rear Cover

FROM THE EDITOR

Ludwell Sibley, KB2EVN

AWARDS TIME

This is the time of year to nominate recipients for the five AWA awards. The annual solicitation is detailed on p. 6. Now - the awards chairmen routinely complain about not getting enough member input. If you think someone deserves an award, here's your chance to be heard - go to the keyboard and write a short letter!

AWA REVIEW, VOL. 7

Production is moving along on the 1992 AWA Review, Vol. 7. We expect to have a couple of good tube features, an excellent item on spark-station history, a fine analysis of arc-transmitter technology, a great writeup on Italian "people's" receivers, and comparable features. The new issue should be available at the Conference, and obtainable by mail order immediately afterward. Of course, this is a good time to point out that the *1993* Review is coming up. If you have a topic in mind, now is the point to get started. The "Hints for AWA Authors" sheet remains available from your editor.

COLONEL? WELL . . .

For a couple of years now, names of auctioneers in AWA events have been reported in the *OTB* as "Colonel." A few of our readers may have misread a quirk of local culture: auctioneers commonly, whimsically, style themselves as "Colonel." Be assured that there is no necessary connection between military rank and the ability to sell radio stuff in front of an audience!

A BRIEF SURVEY OF AWA MEMBERS' INTERESTS

Here's a quick look at the interests of new AWA members, based on the questionnaire contained on the application form. Of 62 respondents, a tabulation of their areas of specialization comes out as follows. (The answers, of course, add up to far above 62 because of multiple responses.)

Historical Interests

Amateur	45	Commercial	20
Broadcasting	38	Electricity	19
Manufacturing	25	Telegraph	13

Collecting Interests

Broadcast Receivers	52	Tubes & Lamps	32
Books & Magazines	41	Comm'l Eqpt	12
Amateur Equipment	32		

It's pretty clear what a diverse set of interests members possess. Broadcast-receiver collectors are certainly here in force. Of the individuals surveyed, 20 are amateur operators, so the focus on amateur topics is no surprise. But a goodly number of respondents are interested in telegraphy, which is a relatively arcane subject today.

THE COVER

This is a promotional poster for the Théâtrophone entertainment service, as covered in Jack Davis' article on p. 10. The artist was Jules Chéret (1836-1932), a talented French lithographer of the Gay Nineties (and much later) who did numerous product ads. The young girls he depicted were so popular in Paris that there were songs about them in which they were referred to as Chérettes. *Poster courtesy of Richard Koszarski, American Museum of the Moving Image.*

AWA NEWS

CALENDAR

August 2 - CHRS Meet, Redwood City, CA
August 6-8 - ARCI Radiofest, Elgin, IL
August 15 - HARPS show, Campbell Hall, NY
Sept. 23-26 - AWA Conference, Rochester
Oct. 16-18 - VRPS-AWA Convention
Nov. 1 - AWA annual business meeting, Rochester, NY
Nov. 7 - CHRS Meet, Redwood City, CA
Nov. 13, 15 - AWA OT Contest

ILLINOIS MEET

Thursday-Saturday, August 6-8

The Antique Radio Club of Illinois' Radiofest 1992 will be held at the Holiday Inn, 345 River Rd., Elgin, IL 60123, (708) 695-5000. Contact Dave Johnson, 2336 S. Kenilworth, Berwyn, IL 60402, (708) 484-2743 evenings or weekends for information. *[Jeff Aulik]*

NEW YORK MEET

Saturday, August 15

Third annual "Old Time Radio and Phonograph Show," to be held 8 AM - 4 PM at the Otterkill Engine Co. firehouse at Rte. 207 and Country Rte. 4 (Maybrook Rd.) in Campbell Hall.

Now sponsored by the Hudson Valley Antique Radio & Phonograph Society (HARPS), the show will feature demonstrations of antique radios and phonos several times during the day. There will be a $1 admission charge. Refreshments will be available.

In its first year, over 400 collectors attended and nearly 50 exhibitors participated. Items likely to be available at the show include console and table radios and phonos, advertising, parts, manuals, books and collectibles related to radios and phonographs.

For directions or exhibitor information, call Gramm-O-Phone Antiques, (914) 427-2602 [ask for John or Linda]; or Victorian Talking Machine Co., (914) 561-0132 [ask for Geoff or Judy] between 6 and 9 PM. *[From press release]*

AWA ANNUAL CONFERENCE - ROCHESTER

Wednesday-Saturday, Sept. 23-26

This year's event will again be at the Thruway Marriott near Rochester (in rural Henrietta, NY).

Auctions: Communications equipment, Thursday AM. Tubes, Friday AM; then books, literature, and the General Auction.

Technical Programs: See pp. 29-32.

Museum Hours: See p. 28.

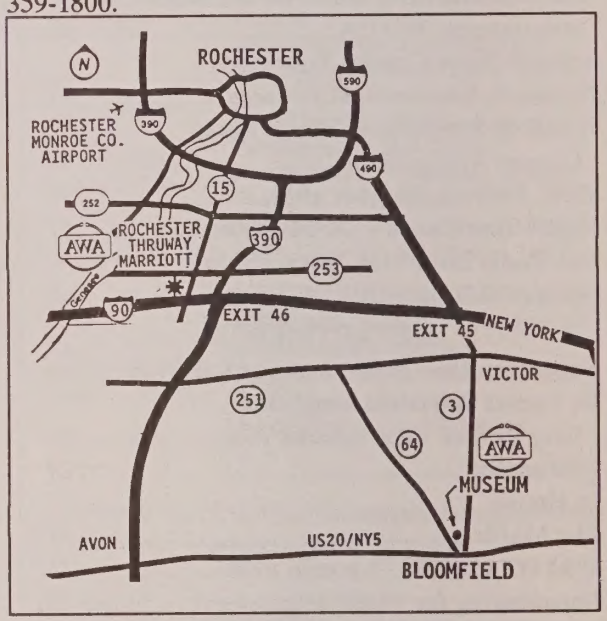
Flea Market: Officially opens the 23rd.

Sightseeing Excursion: Canandaigua Lake cruise and winery tour.

The Thruway Marriott is a full-service, full-sized hotel. It is about 15 minutes from downtown or the airport. Its generous-sized meeting rooms take an AWA-sized crowd nicely. The dining room is quite good. The flea-market area is paved and lighted.

The hotel is reached from Exit 46 of the New York State Thruway (I-90) - take I-390 north to NY 253 west, to NY 15 south. The site is 21 easy miles from the Museum at East Bloomfield. For visitors arriving by air, there is shuttle service, 7 AM - 11 PM. (There is another Marriott in Rochester; be sure to ask for the correct shuttle.)

The hotel offers special nightly rates ($75 single, $85 double, $95 triple, $105 quad) up to September 2. For information or reservations, call 716-359-1800.



MEET REPORT - MONROE

The AWA Southeast meet at Monroe, NC on March 27-28 was the "best ever." Attendance was right at 150 people. The Flea market activity was very good - with the space opened for access promptly at noon on Friday, with at least 40 vehicles lined up and ready. This made for an exciting afternoon of trading and selling. Most people have come to realize that our meetings are being stretched out far, far too long because of the "trickle start" of the flea market. The meetings at Nashua, the VRPS events in Texas, and the BVWS meetings in England have already shown the value of this approach.

The meeting was at a new public facility here

town: a county-owned farmers' market. There is a large cement-paved parking lot with a steel-roofed area in the center that covers about 40 large selling spaces. A fine meeting room upstairs seats about 85 people, with plenty of table space for exhibits and even a projection TV.

There were more than 45 entries in the old-equipment contest, with a good percentage of the quality seen at the Rochester meet.

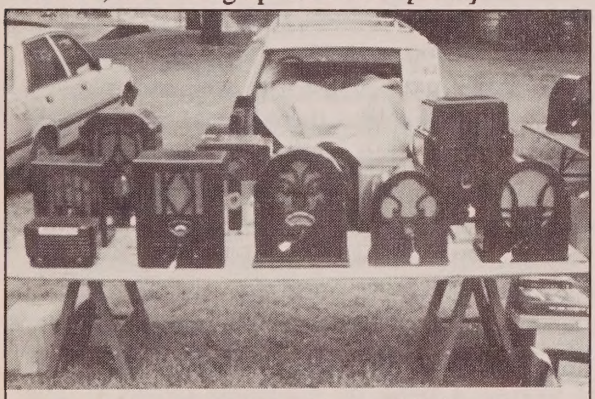
The open house on Friday night continues to be well received. There were about 50 people at the home of Ron and Belinda Lawrence that night. *[Robert Lozier]*

MEET REPORT - BLOOMFIELD

The AWA Spring Meet at Bloomfield (ex-Holcomb) took place on May 2. The event was about the same size as in previous years, with excellent "trading weather" and an active flea market. After the clearance auction at the Museum Annex, the American Legion ladies served their Basic Lunch, as followed by the member-equipment auction. A high point of the latter was a rather fine Scott Imperial in a lift-top console that went for $500. [LAS]

MEET REPORT - TRANQUILITY

This year's AWA event at Tranquility, NJ (May 9) was a substantial success. The weather, miserable the night before, turned to warm sun as the meet opened. Sellers in the morning peaked at about 90, up again this year. After the lunch, Paul Bohlander, W3VVS, gave a slide presentation covering his adventures in restoring radios, including some impressive "before" and "after" views. Thanks, once again, to John Richardt, W2WIY, for setting up the event. *[LAS]*



Ready for trading in a Tranquil(ity) setting.

MEET REPORT - HVRA

The annual Houston Vintage Radio Association show was held May 8-10 at the Astrodome Marriott Hotel. Expanded to three days, the event was a large success. Out-of-town guests accounted for a third of the 94 total registration, traveling from as far away as California. Last year, the auction had to be continued on Sunday morning because of overcrowding on Saturday. This year, with the auction spread over Friday evening and Saturday and with the aid of a computer, we were ready for whatever might come. Auctioneer Bill Werzner moved over 450 lots (15% not meeting reserve), grossing $16,000. The gross was up slightly this year while the number of lots was down a bit. The out-of-town guests were only a third of the audience, but accounted for 44% of the sales and 48% of the purchases in dollar terms. Some of the nicer items were a homebrew TRF breadboard in a glass case, a Crosley Wiget ($300), an Amplion 102 Dragonfly horn ($350), a Majestic ship radio ($250), and a large array of cathedrals and consoles (American Bosch, Erla, Zenith, etc.)

The old-equipment contest, with 82 entries, had the largest number in the manufacturer's category (Atwater Kent). Several excellent, beautifully restored sets were on hand, including a Radiodyne 10, AK 9 with variometer, and AK 10. One winning exhibit stood out from all the sets entered: a Marconi Coherer display with an original coherer and several complete coherers, entered by Bob Botto. Widely popular was Bernard Sampson's Tom Thumb radio mounted on a 1940s Super Deluxe Monarch bicycle.

At the awards banquet, guest speaker Doug Johnson of KPRC Radio-TV kept our attention with humorous glimpses into the broadcast industry, relating what *really* goes on behind the scenes. At the end of the banquet Doug was presented with a fully restored AK console.

HVRA thanks the AWA for continued support, helping make this event a great success. *[David Moore]*

Some auction results:

AK 20	50, 60	AK 37	15
AK 60	140	AK 40	50
AK E speaker	27	Crosley 52	160
Saal horn	80	RCA 33	20
Delco R1229	35	Erla console	75
Philco 90 console	70	Zenith 715	225
AK decals (repro)			125
AK 1928 conv. photo			45
Am. Bosch 116 console			325
Bremer-Tully speaker			55
Magnavox horn speaker			45
Music Master horn, spruce bell			250
Philco 1941 yearbook			4
Philco 60 cathedral			240
Radiola 103 speaker, exc.			80
Radiola 18 w/100A speaker			50
Radiola 8 w/manual			170
RCA 140 tombstone			150
Rider's manuals (asst.)			100
Teacher's Whiskey radio			10
Westinghouse refrigerator radio			120
Zenith 10S464 black-dial console			140
Zenith 7S6J7 black-dial console			150
Zenith console, black dial			85

SILENT KEYS

(AWA members, amateur licensees or not)

Alan R. Bald
William H. Boyer
Tom Galbreath, W2AXX
Leon Lustyk, W2PZU
Robert C. O'Neill, K2AXE (charter member, early Board member and collector)
Edward R. Styles
Robert Van Sleen
David Ross Webster, K6WM

BACK ISSUES

The following issues of the *Old Timer's Bulletin* are in stock and orderable via AWA, 44 E. Main St., Flemington, NJ 08822-1224.

Volume and Number

14-4 18-2 18-3 19-4 21-2 21-3 25-2
25-3 27-1 27-2 33-1 33-2

Also, in Vols. 20, 22-24, 26 and 28-32, *all* four numbers of *each* volume are available. Prices are $2.50 each postpaid.

Also in stock are the following monographs at $1.50 each: "The Federal Telegraph Co., 1909-1920" (Thorn Mayes; 13 pp.); "Priority in the Invention of Radio: Tesla vs. Marconi" (Leland Anderson; 9 pp.) and "The RJ-4 Detector and the Wallace Mystery" (Gerald Tyne, 13 pp.). The Tyne monograph explores whether Edwin Armstrong really *did* invent the regenerative detector. Index to *OTB* Vols. 16-32 and Review Vols. 1-6, free on request with purchase. *[LAS]*

AWA REVIEW AVAILABLE

Volumes 1, 2, 3, and 6 of the AWA Review are available from AWA at the address above. (For the contents of Vols. 1 and 3, see p. 6 of the May 1991 issue; for Vols. 2 and 6, see p. 5 of last October's issue.) Price: $12.50 apiece postpaid in the U. S. and Canada; $14 elsewhere.

RESULTS: AWA PAPER SALE

The May *OTB*, p. 18, announced a mail auction of collectable literature in excess of Museum needs. Here are the main results, from 18 bidders. As in past years, on some items only a single bid came in, and the buyer got a surprise bargain. In other cases there was vigorous competition for an item. *[Dexter Deeley/LAS]*

ARRL PUBLICATIONS

Handbook 1931 (fair): $12.75
Handbook 1932 (good): 25
Handbook 1934 (very good): 27
200 Meters and Down by Clinton de Soto (1936 ed., good): 11
License Manuals, 1935 and 1945 (fair): no bid

BOOKS

The "Radio" Handbook, 1935 (loose covers): 15
Evolution of the Electric Incandescent Lamp by Franklin Pope, 1894 (good): 60
Elements of Radiotelegraphy by Ellery Stone, 1919 (very good): 30
Modern Radio Reception by Alfred Leutz, 1925 (exc.): 52
Practical Wireless Telegraphy by Elmer Bucher, 1917 (good but blemished cover): 25
Radio Listener's Guide & Call Book
1925 (fair): 20
1925, Fall ed. (covers poor/missing): 12
Modern Electrics, Apr. 1908 (1976 reprint): 12

CATALOGS

Allied Radio, 1936 (exc.): 17.95
Allied Radio, 1943 (covers loose): 5
Allied Radio, 1948: 14.50
Allied Radio, 1949 (poor): 5
Concord Radio, 1948: 5
F. B. Chambers B-24, 1915? (very good): 100
Lafayette Radio, 1940 (good): 16.90
RCA "Radio Apparatus," 1922 (very good): 70
Sears, Roebuck & Co., 1935 (good): 8.25
Wholesale Radio Service Co., 1935 (good): 4

NEW GEAR IN AWA MUSEUM

Thanks to: Orn Arnason; Bob Corbin, KB2-OVD; Jim Dates, W2QLI; Karl Medrow, W3FA; Jerry Minter; Don Pavek; Tony Peres; Larry Robins, W3CEI; Richard Row; Harvey Samuels, WA2LUE; Ness Terrill, K2BFI; Brian Thomson; Elmer Wagner, WB2BNJ [BK]

SILENT KEY EXHIBIT

Some time ago, the Museum started a small collection of keys used by former members who were silent keys. The keys were usually donated by family members of the deceased amateur. A small area has been established for the display with proper identification. [BK]

A reminder: Top selling books Empire of the Air and Don Wallace - W6AM, as well as the AWA Review, are available at the AWA Museum. [BK]

NOMINATIONS FOR AWA AWARDS

It is time to nominate candidates for five prizes to be given at the annual Conference.

The **AWA Houck Award** for documentation goes to an AWA member who has written several original articles on radio development or history in the *OTB*, Review, or other publication. (This can include a book on a related subject.) The nominee for preservation should be a member who, through personal accomplishment, has acquired and preserved by documenting an outstanding collection of radio artifacts. This definition excludes individuals who regularly buy and sell items. Send your selection(s) to the awards administrator, giving your reasons why the nominee(s) should receive the Award. The address: Robert Merriam, 697 Tillinghast Rd., East Greenwich, RI 02818.

The **BK-OTB Award** is given to the member who publishes in the *Old Timer's Bulletin* an arti-

cle judged to be the most outstanding, original historical presentation of the award year. For this year, articles in the October 1991 and February, May, and August 1992 issues (not the Anniversary special in June) will be considered. All AWA members are eligible for this award except those on the Award Committee and the *OTB* editor. Simply identify the article and the nominee, with reasons for your selection. Nominations should be sent to award-committee chairman Bill Denk, W3IGU, 81 Steeplechase Rd., Devon, PA 19333.

The **Taylor Award**, in memory of John Taylor, RCA TV developer, is for "preserving television history." Submissions are invited here, too. They may be sent to Ross Smith, 1133 Strong Ave., Elkhart, IN 46514.

The **Tyne Tube Award** is presented, in remembrance of Gerald F. J. Tyne, for contributions to preserving or documenting the history of tube technology. Nominations of AWA members are needed for the 1992 award. They may be sent, with supporting reasons, to the administrator, Lauren Peckham, Ormiston Hill Rd., Breesport, NY 14816-9709.

Please send nominations by September 1.

E. H. SCOTT HISTORICAL SOCIETY

The recently formed E. H. Scott Historical Society, Inc. is dedicated to the preservation of the history and products of the Scott Transformer Company and the E. H. Scott Radio Laboratories which existed in Chicago between 1925 and 1953. The Society is unique in that, as far as can be determined, no other radio historical society is oriented toward a specific manufacturer. The Society is a public society, non-profit/tax-exempt under IRS 501(c)(3) status. In this respect, this Society is based on contributions and donations of a financial and equipment nature.

We are not oriented toward just preservation, but also toward education of the public and providing services needed by collectors of these fine radios. Our journal is the *Scott News*, published quarterly for members. In this respect the four primary goals of this organization are as follows:

- To educate the public in regard to the history of E. H. Scott and his company.
- To provide a forum for the documentation and preservation of Scott radios.
- To develop a collection of Scott memorabilia, artifacts, and radios for public display.
- To develop an institution devoted to the procurement, care, study, and public display of such a collection.

For further information please contact: E. H. Scott Historical Society, PO Box 1070, Niceville, FL 32588-1070. Dues are $20 per calendar year, prorated to the quarter of joining. *[John Meredith/Jim Clark]*

DISPLAY AT SFO

Traveling AWA agent Peter Dugal reports spotting an exhibit in the passenger-arrival area of San Francisco International Airport, organized by collector Dan Healy of Woodacre, CA. Items displayed are Hallicrafters and National receivers, a WECo 13C amplifier, etc. A novel location with traffic of *thousands* of viewers per day. *[LAS]*

VWOA MARCONI MEMORIAL AWARD

At its recent annual awards dinner in New York, the Veteran Wireless Operators Association recognized several AWA members for contributions to radio history and participation in the PBS documentary "Empire of the Air." The Marconi Award went to Tom Lewis, Robert Morris, Gertrude Tyne, Morgan Wesson and Bruce Kelley. *[BK]*

AARP PLUGS RADIO COLLECTING

A page-and-a-half feature story in the May *Bulletin* of the American Association of Retired Persons brought a wave of inquiries from potential members of AWA and other clubs. Titled "Radio Days" and written by Robert Hey, it featured interviews with Brian Belanger and Joe Koester of the Mid-Atlantic Antique Radio Club and with Bruce Kelley, AWA Museum curator. Photos of representative sets from the Belanger collection were included. A nice example of the wide appeal of old-time radio. *[LAS]*

REWARD: FOR INFO ON WEST COAST WIRELESS: *Wanted:* Anything and everything written or recorded about Wireless (commercial, amateur, maritime, military and naval) on the West Coast between the years 1899 and 1920, for an article in progress. I will pay for originals or copies, especially photos and drawings and diagrams, articles from old magazines, stock certificates, licenses, and color photos of wireless gear. For your response, the Reward is an autographed copy of *"America's Wireless Spies."* Everything is appreciated, including references to already published materials (I have *"Electronics in the West"* and most of the books (e.g., Aitken, Douglas, Mayes)). All materials will eventually go to the Electronics Museum of the Perham Foundation (former Foothill Museum). Correspondence is invited: BART LEE, 327 Filbert Steps, San Francisco, CA 94133, day phone 415 956 5959, evenings 415 788 4072 call collect. Thank you, 73.

IHRS SPRING MEET

Larry Babcock
8095 Centre Ln., E. Amherst, NY 14051
With additional details by **Ross Smith**

The Indiana Historical Radio Society held its 21st spring meet April 30-May 2, the first time for a three-day event. There were 166 registered from several states, including California. I had attended this event some years ago when it was held at the Auburn-Cord-Duesenberg Museum in Auburn, IN. I decided that this was a good year to attend again despite the conflict with the AWA event at Holcomb/Bloomfield, NY, on the same date. I do believe that I was probably the only person who attended both activities.

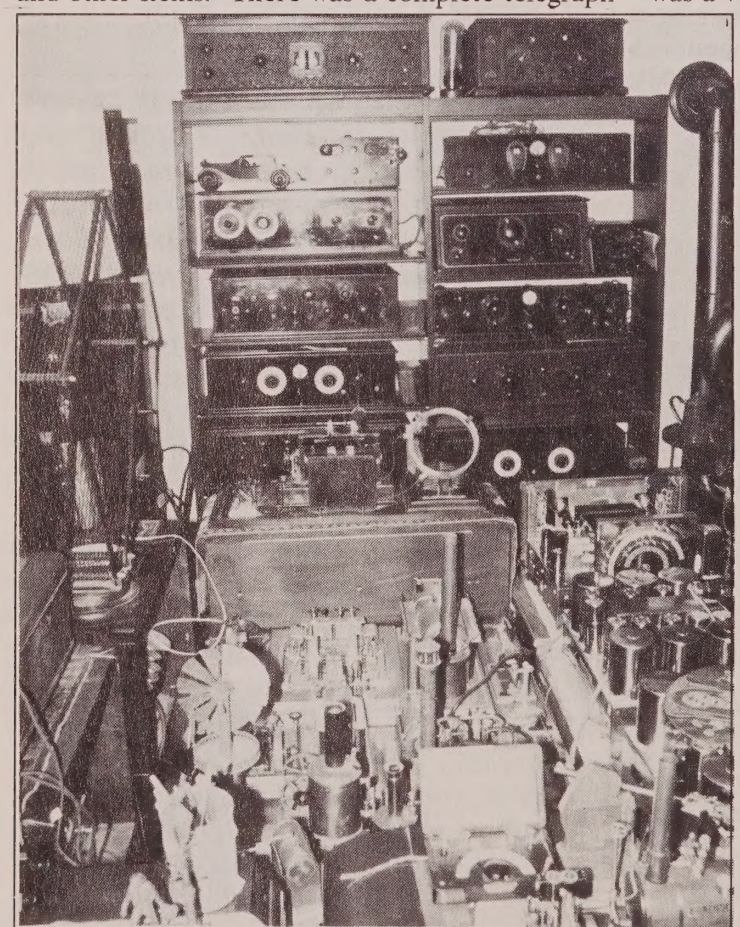
I thought the first IHRS event was the highlight of the meet: a visit to the beautifully restored 120-year-old country home of Don and Marilyn Johnston. Despite the large size of their house with 14' ceilings on both floors, Don had found it necessary to build a two-storey addition to house his radio collection. Don is a Scott collector with a large number of sets, having been a Scott service rep a long time ago.

Intermixed with these fine classic sets were many very unusual and large antique toy steam engines and other items. There was a complete telegraph station in one corner of the room, in memory of Don's father, who was a telegraph operator.

Don also has some fine historic radios, such as a two-stack Amrad and a capacitor-tuned AK 9 breadboard. A large group of collectors attended Don and Marilyn's open house.

The emphasis at this meet was on the flea market in the Ramada Inn parking lot on the outskirts of Kokomo. The flea market did not start until the day it was scheduled to begin! Nobody set up on Wednesday. Thursday peaked with about 50 dealers at noon. Friday was bigger, with a maximum of 62 sellers including a few inside the Inn. There was room for many more inside but the weather was so beautiful that most opted for outside space.

As everywhere, there were fewer nice old sets for sale. At the peak of the sale I counted only four horn speakers displayed for sale, three of those on one table. There was quite a number of AK breadboards. The cheapest was priced at $795. One was $1000 with the horn. I noticed that they didn't seem to move at these prices. There was a very nice Grebe CR-9 for sale, a Federal 57 and 110, and a restored Chicago Radio Labs (Zenith) 1R with amplifier for $700. There were lots of Scotts and a few Kennedys, including a 281 with amplifier. Also, there was a Sparton Nocturne blue-mirror radio and the little Brush pottery-beetle crystal set, but no "wireless" equipment in the parking lot at any time. Catalins were conspicuous by their scarcity, with a maximum of maybe six for sale.



Part of Don Johnston's antique-radio collection. See the rear cover for more. (*Babcock photos.*)

Personally, I was satisfied with my acquisitions. I bought a nice group of *Radio Retailing* magazines. Have you noticed that this magazine now seems to be selling for more than *Radio News* of the same dates? Of course it was the radio dealer's magazine, containing lots of history of the various manufacturers and their complete product lines for each year. I got a Crosley porcelain tube socket in the original box, 10 *Radio Broadcast* magazines and a couple of Rider's manuals. I also obtained an Italian 2000-lire note honoring Marconi. Did you know that the 1990 2000-lire note has a large picture of "G. Marconi" on the front side and pictures of his yacht and his magnetic detector on the reverse? I also found the recent Italian 100-lire coin with Marconi's name and a loop antenna on one side and

his face on the other. Searching for information on companies and products made in the Buffalo, NY, area, I found a rare paper describing a Branston superheterodyne kit and a folder describing the part played by Carborundum in Niagara Falls in 1925.

Other activities supplemented the flea market. It is a tradition for Pete Yanczer to show some movies from his collection. There were two Laurel and Hardy silents and a third, really cute, sound film showing how they put up a rooftop radio antenna in the old days. There was also an interesting restoration clinic by Ross Smith and a ladies' luncheon. The theme for the meet was GM-Delco, with a tour of the Delco plant (right across the street) conducted by Marilyn Johnston, and Delco table radios as one of the seven categories in the equipment contest. A display of members' radios occupied a viewing area separate from the contest.

When I made my reservation, the Ramada Inn was full, so I chose HoJo's. At $35 a night, that was an inexpensive choice. It turned out to be a fine selection - my room was no farther from the flea market than the rooms at Ramada.

Twenty-three attended the Friday ladies' luncheon and heard the program on collecting and using antique lace. It was so successful that the activity will be repeated next year. The banquet had an attendance of 80. Ed Taylor announced winners of the equipment contest. George Freeman won first in class 7, best of show and the "Grebe Trophy" with his beautiful pictorial displays of radio personalities, old time radios and radio station information entitled "WKRP-KKRC." The speaker was John Coleman of WIOU-WZWZ.

The Saturday auction was attended by 71 registered bidders; 240 lots plus some donated items were sold in four hours. Some of the nicer lots traded included a working Radiola 26, less battery box, for $290 and a Silver-Marshall console for $150. A Magnavox R3 horn speaker went for $103, and an M3 for an even $100. Only two items were bought back by the seller rather than be sold for "too low" a price. There were many bargains for those attending. Horn speakers went high but older radios did not. A Crosley Trirdyne went for $43, a Radiola 33 for $23 and a Westinghouse RC for $95. Ross Smith expects that auction prices will probably be higher next year!

I was told the IHRS signed up about 35 new members and felt it was a very successful meet. I agree, finding the location to be comfortable, the people friendly, great weather and the first Midwest meet of the season.

Finally I would like to thank Marilyn Johnston for sending information on those parts of the meet that occurred while I was rushing back to attend the meet at Holcomb/Bloomfield.

ARCA CONVENTION

Lauren Peckham

This meeting, co-sponsored by the Pittsburgh Antique Radio Society (PARS), was held at the Holiday Inn near the Pittsburgh airport on June 4-6. This location worked well, although one had to watch road signs carefully when driving in on I-79.

Although rain showers shortened the flea-market activity Thursday afternoon, Friday was quite pleasant, with only an occasional sprinkle.

Following the usual pattern of radio collectors, I headed for the flea market early Friday. Items available included the famous GE advertising doll, an early Murdock receiver, a Crosley Pup, loose couplers, early tubes including an unusual x-ray type with rotating anode, novelty sets, advertising items, a display of hard-to-find reproductions of dial scales, mane plates, Radiola crystal-detector parts, and even some cabinets for early Crosleys.

Inside, a working console radio provided entertainment for the registration workers. ARCA is in the book-selling business and always has a nice assortment of materials for the collector and historian. There was also a display of photos from the famous WLW 500-kW station, plus some dandy shots showing the manufacture of Crosley radios.

The old-equipment contest reminded me of the AWA receiver contest on a smaller scale. I felt right at home as, sure enough, there was Ralph Williams, hard at work with a team of judges. It was obvious that most entrants had spent plenty of time preparing their displays. Several unusual sets made in and around Pittsburgh were of great interest. There was a demonstration of a balsa-wood flat-panel speaker made by Larry Babcock. Seems Larry's dad had made one of these back in the 1920s, so a 1992 version was produced, right down to a driver from a damaged WE cone speaker.

The programming was enjoyable, although we arrived too late to attend the Thursday sessions. Bruce Kelley was the official AWA representative. His slide-illustrated talk covered amateur radio from 1910 to about 1960. Some juicy equipment could be seen in those early radio shacks!

We had to head home before the auction, but did see some interesting items, including a National FB-7 with power supply, an early Steinite AC-operated set, Kellogg receiver with those neat double-ended type 401 tubes, and even a homemade horn speaker, using a horn lifted from the family phono.

All in all, Joyce Peckham, Bruce, and I enjoyed ourselves and spent as much time as possible talking to old friends and meeting new people, too!

THEATROPHONE

Jack Davis
63 Midchester Ave., White Plains, NY 10606

The phenomenal growth of our fiber-optic network suggests that the days of over-the-air transmission are numbered, and that in the future, entertainment and news will come into our homes via the phone line. All predictions are that this will certainly occur by the end of this decade, and everyone has great praise for this revolutionary new development.

I was discussing this not long ago with a friend who made the amazing statement that there wasn't anything new about this concept at all. To prove it, he sent me an item that appeared a century ago in the London periodical the *Pall Mall Gazette*. The headline of the article was "Music, News and Speeches by Telephone" and read as follows:

"The theatrophone (writes a Paris correspondent) is intended to transmit by means of a clever adaptation and application of the ordinary telephone, everything audible that goes on upon the stage of the various Paris theaters. The Théâtre Français, the Opéra Comique, the Boufes, the Nouveauté, and some others, have already consented to admit it. The theatrophone is already a feature of the clubs and the large hotels and cafes, and has been fitted up in many private houses. In private houses communication with the theater is uninterrupted, but in hotels, restaurants or cafes, communication is dependent upon the insertion of either a 50 centimes piece or a franc, whereupon the instrument transmits the sound for a limited time. The delight to be got out of such an instrument during a long winter evening of snow or rain is obvious. There is already an idea of placing it in the tribune of the Chamber, and even before the seats of the deputies. It is intended to have a spoken daily paper late at night, which will carry to the clubs, hotels and newspaper offices all the latest news at home and abroad. This will appear between one and two in the morning, and will be a summary of the previous 24 hours."

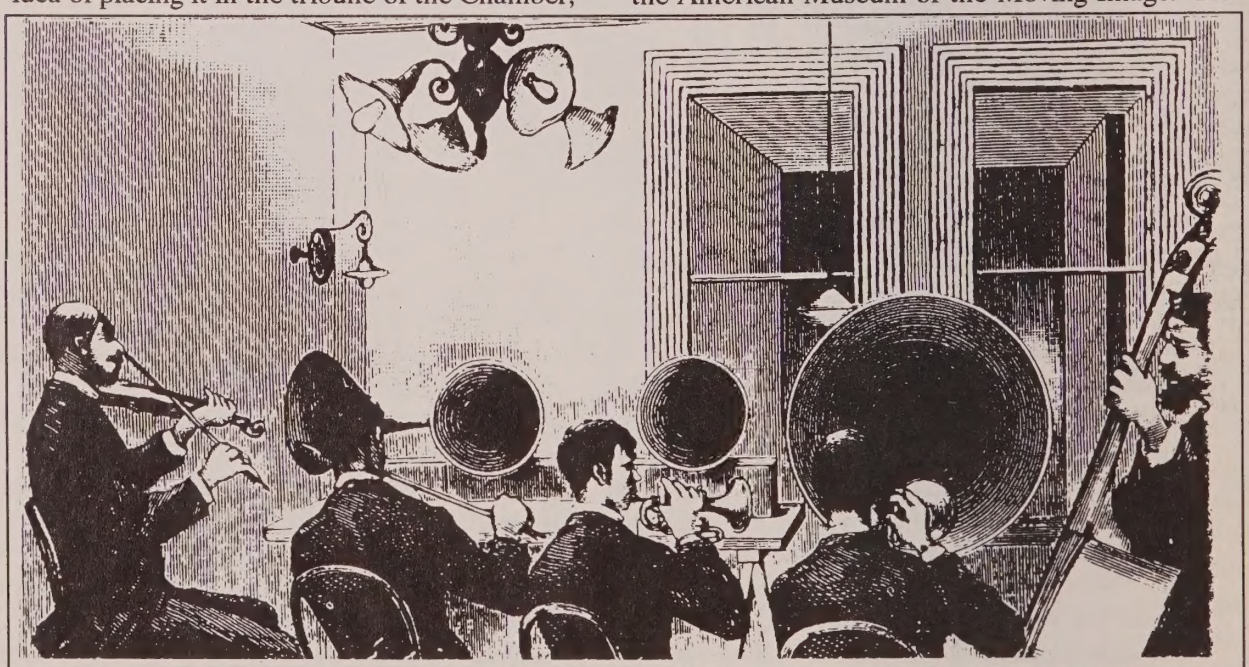
The date of this article was May 29, 1891!

Much has been said about David Sarnoff's 1916 American Marconi Company memo. Tom Lewis refers to it in Empire of the Air as having "prophetic quality." The thrust of the memo was to blueprint his proposal to market a "Radio Music Box" whereby purchasers "could enjoy concerts, lectures, music, recitals, etc." The *Gazette* item shows that the idea had been around for quite a while before Sarnoff.

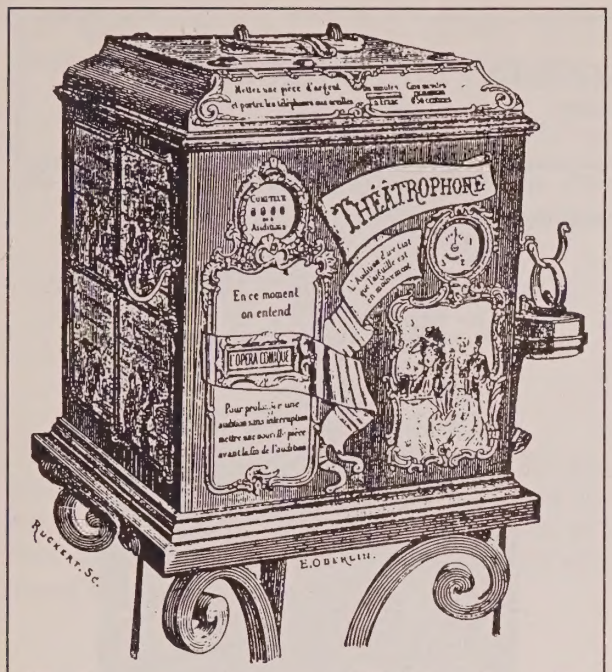
So, the question was, if the Theatrophone was operational as described in the article, should not the people or company that pioneered the concept a quarter of a century earlier have received some recognition? Who were they, and what happened to the project?

It is ironic that when the inevitable shift is made to bringing us entertainment and news via our fiber-optic phone line, we will have come full circle back to the Theatrophone! Someone deserves credit for that.

The idea so piqued my interest that I sent copies of the *Gazette* article to friends who might furnish information as to the existence of such a system. First to respond was Richard Koszarski, curator of the American Museum of the Moving Image. He



The New York studio, 1893. A carbon microphone used this way can produce a watt or two of power.



The listener's coin-operated Théâtrophone device, complete with coin slots (10 minutes for one franc), time-remaining meter, and annunciator showing what program was on. The picture panel displays the same drawing as on the Théâtrophone poster. (*Courtesy Alan Douglas*)

remembered a poster with that name in the museum's collection, and found a wonderful print done in 1890 by the French artist, Chéret, titled "Théâtrophone."

I sent a copy of the article and poster to Pat Leggatt. He responded with proof that the system was also in operation in England from 1894 to 1925, under the National Telephone Company. Taken over by the General Post Office in 1912, it finally closed down in 1925, when broadcasting took over the bulk of the audience.

Pat also sent an illustrated article from 1898, titled "The Theatrophone Brings Music into the Home." It describes the French system alluded to in the *Gazette* in detail. It also quotes from the *Electrical Engineer* that "American long distance companies were successfully transmitting quartets and quintets over distances of many miles."

I sent this material to Tom Lewis, with an aside that had vacuum tubes been around at that time, we might have bypassed the radio era altogether, leaving him with no Empire of the Air to write! Tom's answer added some startling new information. He wrote:

> At the beginning of A Tower in Babel, Erik Barnouw writes that in the summer of 1890, 800 people in the Grand Union Hotel in Saratoga Springs listened to a "concert by telephone wire from Madison Square Garden, as well as dance music and a recitation of 'The Charge of the Light Brigade.' The program was also heard by a gathering at the home of a telephone executive in New Jersey where guests danced 'with perfect ease' to the music.

Tom, a native of Saratoga Springs, promised to research files of the local paper, the *Saratogian*, for further material. The Grand Union Hotel was the legendary summer home of the Social Register's "Four Hundred." I remember visiting it in the '40s, shortly before it was razed to make way for, of all things, a Grand Union supermarket! The contents were auctioned, and items that today would bring a fortune were grabbed up by souvenir hunters for a few dollars. Shades of Cortlandt Street and all the IP-501s and WW I gear that were sold for next to nothing.

My purpose in presenting this brief review of that I think is a fascinating piece of history is to elicit further information. A similar encounter with pre-WW II television receivers got me started on my interest in television and to impart it to others. Now that the Theatrophone has come to light, I want to know more about this overlooked predecessor to today's omnipresent information and entertainment industry.

So, perhaps some reader can supply more information on this part of our communication history. AWA members interested in early telephone apparatus may have some answers. It would not surprise me to learn that the English participation came from the fact that Thomas Edison's loudspeaking telephones were used there for a number of years before being discontinued because of the desire for privacy. However, they provided great volume and could have been the instruments used in the English version of the Theatrophone.

I am indebted to Pat Leggatt, Richard Koszarski and Tom Lewis for their help. The friend who got me started on this search by sending me the *Gazette* article is Henry Graff, Columbia University professor emeritus. I look forward to hearing from anyone that can add to the history of the Theatrophone.

Listening to Edison's loudspeaking telephone.

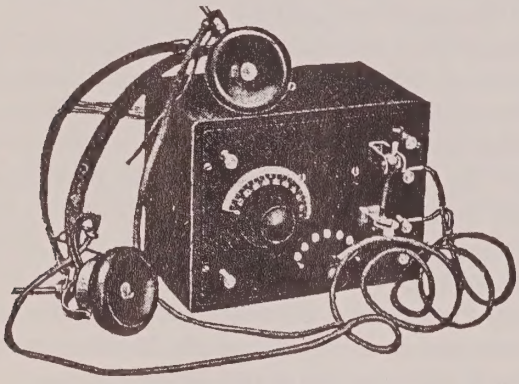
INTRODUCTION TO COLLECTING EARLY RADIO RECEIVERS

Bruce Kelley

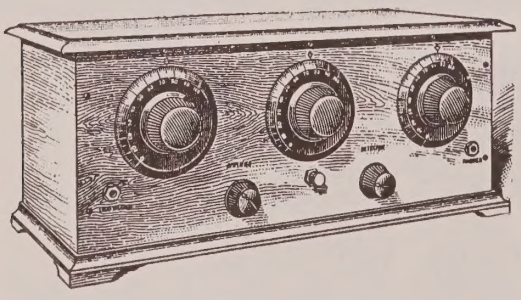
Although some individuals began collecting early radios in the Forties, it wasn't until 1952 that the first collectors' club was organized. Today there are two national and about 30 quasi-national, regional, or local clubs. Interest is primarily focused on tube-type broadcast receivers, although interest in early transistor radios and television sets has developed in recent years.

Receivers can be broken into eight general categories:

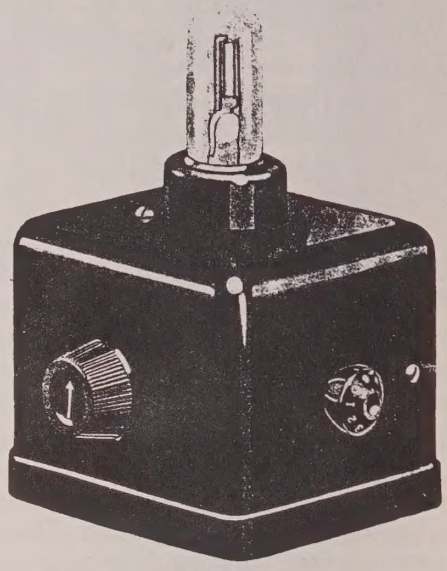
1. **Factory-made crystal sets.** Although originally the least expensive, these are now commanding the greatest increase as compared to original price. Sets that once sold for $5 and $10 now sell between $150 and $300.



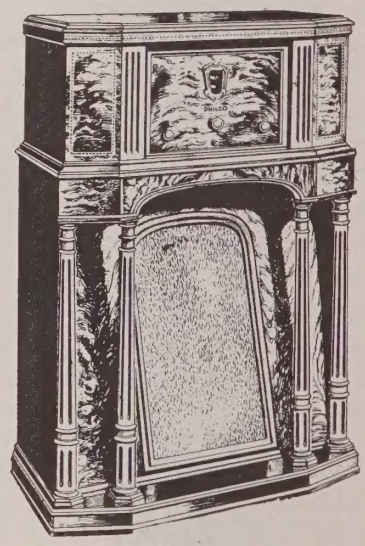
2. **Battery receivers made in the 1920s.** The most common are "three-dialers" with five tubes. Different manufacturers made these sets by the hundreds of thousands, with peak production between 1925 and 1926. Oddly enough, a 1925 sale price of $30 to $60 has changed little after 65 years with the exception of early Grebe, AMRAD and Federal sets, which command high prices.



Another oddity is that early battery receivers with fewer tubes are frequently of greater value today. Two-tube Crosleys sell for four times their original sale tag while the $10 Crosley one-tube "Pup" is now bringing $200! Exceptions to this are rare superheterodynes such as Leutz, and Atwater Kent breadboards. The latter are three- to six-tube receivers with components mounted on a board (no cabinet). These sets are very popular with collectors and sell for $400 to $1000, depending on the model.

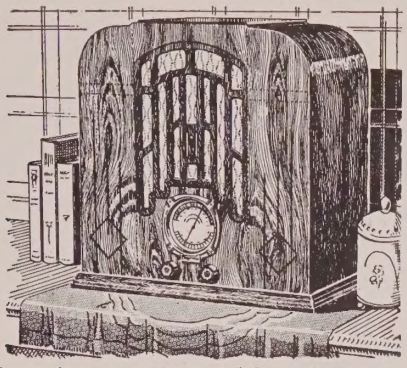


3. **AC receivers.** Mass-produced all-electric sets appeared in the late '20s. Early ones were large and heavy. The Depression spurred introduction of smaller, inexpensive models. These sets have marginal values, while consoles of this period were not originally sought by the collector because of their size. This attitude has changed in the past few years, since some consoles represent fine pieces of furniture. Scott and McMurdo Silver are top-of-the-line consoles, followed by certain model Zenith, Philco and Stromberg-Carlson sets.

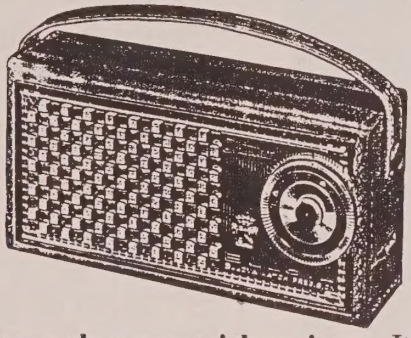


Collectors are seeking three broad types of AC table receivers: (a) "cathedral" shape models from the early Thirties in wooden cabinets, with Philco being the most popular; (b) Catalin sets with Art Deco styling in a cast-plastic cabinet recognizable by vivid colors; (c) novelty receivers - small table

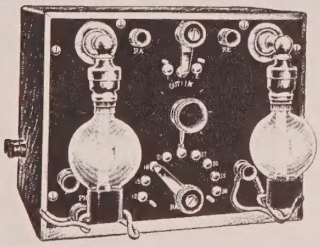
sets made in bottles or globes, or with special "personality" features such as Charlie McCarthy.



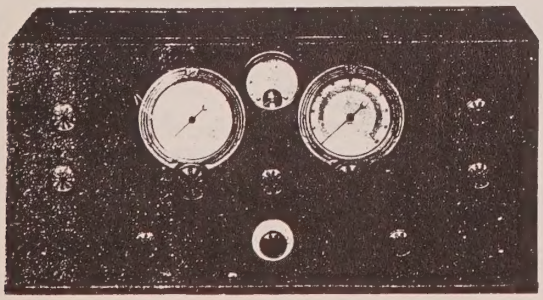
4. **Transistor radios**. Although most recent and least expensive, there has been an increasing interest in small pocket radios made in the '50s and '60s, especially the earlier U. S.-made models with metal chasses and novelty types.



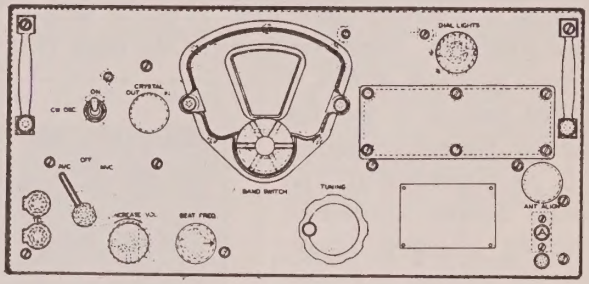
5. **Very early commercial receivers**. It is very difficult to categorize these sets since they cover a time span of 25 years (1900-1925) with limited production, not intended for public consumption. Certain pre-WW I Marconi receivers are in the $10,000 range. The odds of finding one of these sets in a flea market are very remote - but there are always exceptions!



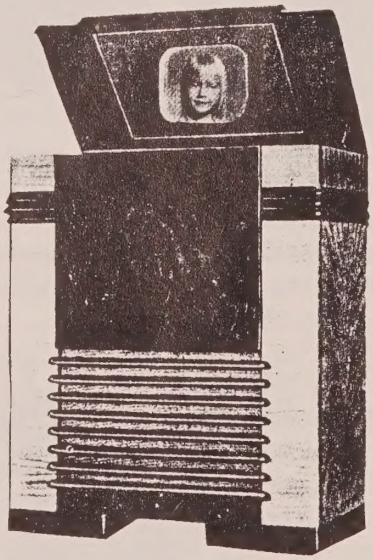
6. **Amateur SW receivers**. Radio amateurs are collecting sets manufactured between roughly 1930 and 1960, with National products receiving the greatest attention. The three-tube SW-3 is currently a hot item.



7. **Military receivers**. Radio equipment for Army or Navy use has always been collectible. Receivers of WW II or Korean vintage are still available at reasonable prices, although they are most desirable if postwar modifications are absent or can be removed. Foreign sets and spy receivers are hot items.



8. **Television receivers**. TV sets can be broken into two distinct groups. Mechanical disc scanners made between 1928 and 1932 are very rare and command high prices. The other group is tube sets made just before and after WW II. Some of the prewar sets, like the RCA TRK-12 mirror-in-the-lid model, are in the $2000-3000 range. Postwar receivers range in value from $50 to $400. The little 1949 Pilot 3" set, originally sold for $99.95, is currently bringing $150-300. TV receivers made after 1949 have relatively little value except for the first color sets (1954-55) and the Philco Predicta models of the late Fifties.



The value of a receiver can vary dramatically, depending on condition of cabinet and electrical operation. Restoring a receiver electrically can be frustrating if one does not have a radio background. Fortunately, several individuals advertise schematic diagrams for old sets at nominal prices. Finding 50- to 60-year old replacement parts can be a challenge to the uninitiated, but collector flea markets and specialty firms generally supply everything that is needed.

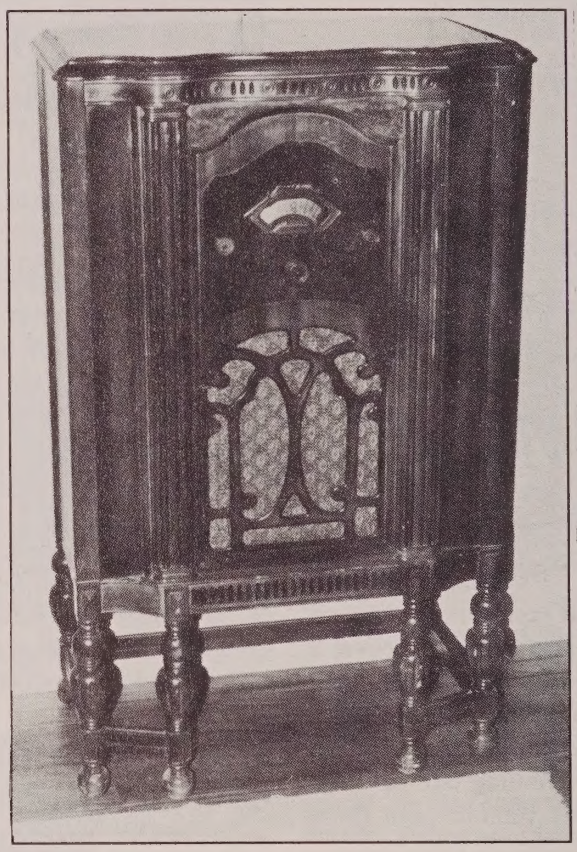
A SILVERTONE MODEL 1670

"IT LOOKED BRAND NEW"

Leonard Aquilino, Jr.
336 Hickok Ave., Syracuse, NY 13206

THE APPEARANCE

This early-Thirties Silvertone console was discovered at a private house sale. It was in immaculate condition. There was none of the usual dust or rust; so clean, in fact, it looked just as it left the factory. The price was only $12, so I grabbed it. At home, further inspection revealed like-new condition throughout. All components were original, the speaker cone perfect, and the old varnished-cambric wire in mint condition. Liquid was still in the filter-condenser cans. Construction of the chassis was impressive. A five-inch deep channel section of 13-gauge iron was copper-plated and painted aluminum. The ends were closed with plates featuring neat T-lap corners and fastened with countersunk bolts. The already massive construction was further strengthened with additional braces welded in each end plate. A mirror-smooth sheet of terne plate tacked to the cabinet closed the bottom. Exact identification was difficult, since the factory had neglected to fill in the model number on the sticker. With the aid of a chassis layout, AWA member Alton Bowman was able to pinpoint it as a Model 1670. The schematic showed a power supply with two 80s in parallel, and the audio output with a pair of 47s which I assumed were push-pull but turned out to be parallel-connected.

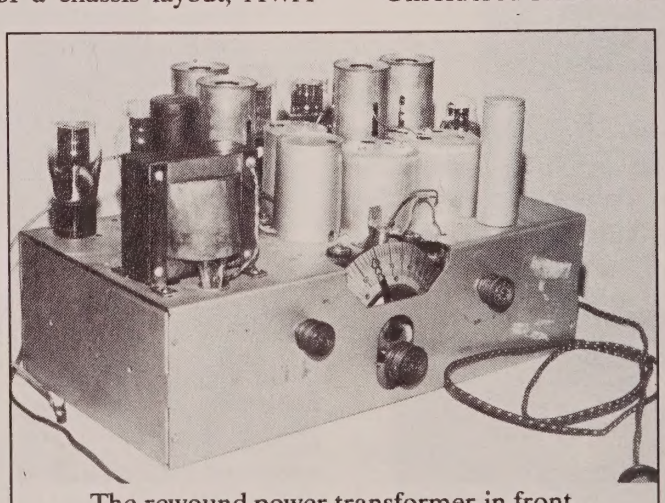


THE REALITY

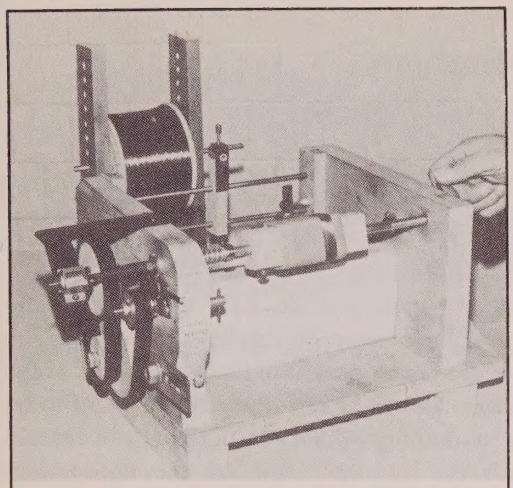
Soon, little tell-tale signs began to surface. The volume control was loose, and someone had unsoldered several leads. A resistance check showed the output transformer had a burned-out primary. (How could that be, it looked brand new?) Anyway, the transformer was removed and unwound until a break was discovered. To save time, I decided simply to splice the ends and varnish the joint. The neat layered method was also abandoned; the coil was merely random-wound by running the lathe on its lowest speed. The finished transformer was bench tested and seemed to work OK.

The tuning mechanism was an inventor's delight. Turning the knob drove a pair of spring-loaded thrust washers which gripped the dial wheel with considerable force. The dial wheel, calibrated in an arc of 225°, turned the gang condenser which rotated through the usual 180°. As one can readily see, a fixed pointer could not indicate readings throughout the full range. Silvertone solved this dilemma with a movable pointer. As the dial turned in one direction, an eccentric and linkage swept the pointer the opposite way. This retrograde motion is fascinating to watch through the dial window.

Unsoldered leads were reconnected. The wet-electrolytic cans were removed, carefully opened, and new condensers concealed inside. New filters are usually standard requirements on an antique radio, so I didn't give it much thought. Nothing else could be wrong with this brand-new set, right? Yeah, sure. Another defective component was discovered: a four-watt resistor providing oscillator plate voltage. Bypass and coupling condensers also tested bad, and were rebuilt using the



The rewound power transformer in front.

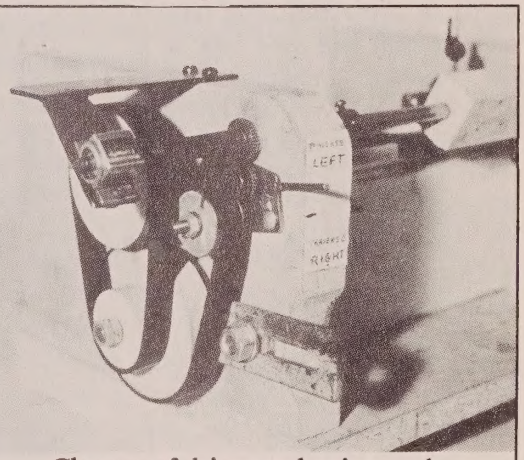


Home-built coil winder, starting the high-voltage winding of 32-ga. wire.

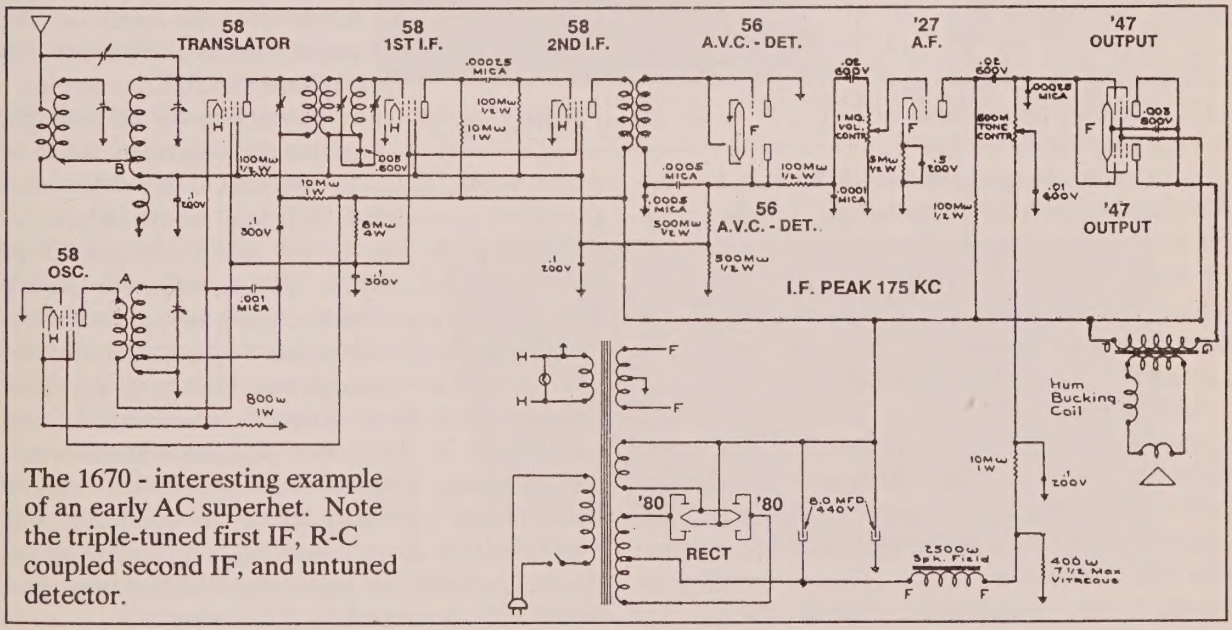
time-consuming method of melting the sealing wax, pulling the defective core out, and concealing new condensers inside. I surely must be done now! All tubes tested OK, all resistance tests passed, and I was ready to turn the set on. Rather than plug directly into line voltage, a Variac was used to bring it up gradually. At about 50% power it happened. I heard the sound of bacon and eggs frying, and recognized the unforgettable smell of burning insulation. The power transformer was bad! I had neglected to perform one of the most elementary of tests to an unknown piece of equipment. But I couldn't quit now. The transformer was removed from the chassis. (How could it be bad, it looked brand new?) Then, layer by layer, with copious notes and diagrams, the unit was dissected. All wire appeared good except for the high-voltage winding, which was cooked from excessive current draw - all 900 feet of it.

To rewind using the random method, as was done on the output transformer, was really not proper. Yet it was not practical to layer-wind on the lathe because the delicate wire (only 0.008") would surely break with so much power. A hand-driven coil winder was conceived and built using spare junk from around the shop, with hard maple for the frame. Feed was accomplished with a lead screw similar to that of a lathe, and pitch was determined with pulleys and belts. Left and right traverse was done with a miniature system of tumbler gears patterned after that on the lathe. A counter on the main spindle recorded the turns. Much trial and error with continuous redesign (!) finally resulted in a table-top winder which laid the 32-ga. wire down in neat rows. Each layer was covered with varnished onionskin paper. The very sensitive feel of hand cranking enabled the operator to have infinite control of the wire. The entire high-voltage winding was completed without mishap. The finished core included all the antique leads salvaged during teardown. After reinsertion of all laminations and a final varnish, one could not distinguish from the original. The transformer was reconnected and the set brought on line. No bacon and eggs this time - just music! What a thrill. Twelve condensers, one resistor and two transformers later my "new" Silvertone was finally operating.

Would I do it over again? Probably so. I really enjoyed the challenge and the subsequent journey.



Closeup of drive mechanism and turns counter.



The 1670 - interesting example of an early AC superhet. Note the triple-tuned first IF, R-C coupled second IF, and untuned detector.

"THE VOICE OF THE PRAIRIE": A BRIEF HISTORY OF W. W. GRANT (1892-1968)

Dr. Robert P. Murray
3216 Assiniboine Ave., Winnipeg, MB, Canada R3K 0B1

LITIGATION

William Walter Grant had been in the British Royal Air Force in World War I, as second-in-command of a radio and photographic installation and repair establishment near the front lines in France. He and his subordinates were installing and maintaining all the latest wartime radio equipment, and adjusting and improving it as they did so. When Grant returned home after the war, he went into the radio business.

Legend has it that Grant and H. Gordon Love were once friends, but that the friendship ended with Grant chasing Love down a Calgary street with a piece of 2-by-4. Love had become the local manager for Canadian Westinghouse, and Westinghouse had the Canadian rights to the Armstrong patents. Grant had sold one of his newly manufactured broadcast receivers to Love, who apparently had then advised his new employers at Westinghouse that their patent rights were being violated in Calgary.

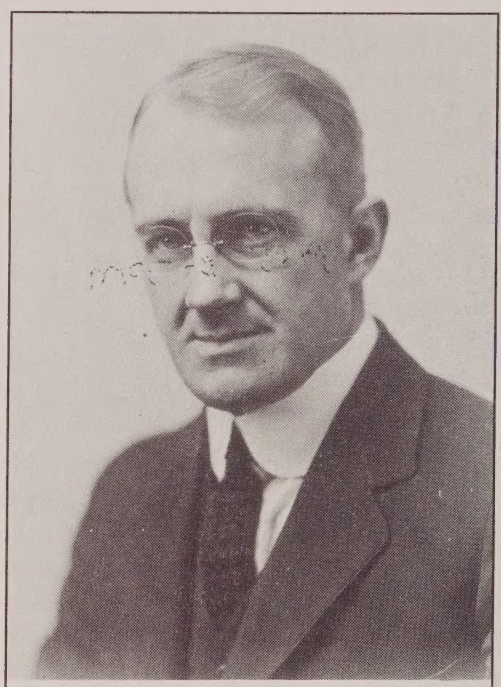


Fig. 1. W. W. Grant in 1922, age 30.

There followed a dispute between Grant and Love that was charged with a great deal of passion in the mid-1920s. From this distance across time, it seems to have been essentially due to two events: First, Armstrong was slow in getting his regeneration patents registered in Canada, and, second, Grant had come to believe that, on the basis of his wartime work, he had access to radio designs with which he had become familiar. In the early 1920s he was actively engaged in manufacturing devices which were covered by Armstrong's U. S. patents. He later freely admitted this in court. In the early days of his manufacturing, though, he may not have been particularly aware of Armstrong's work.

After WW I, Canadian (i. e., British) law allowed a grace period of five years for patents to be registered on inventions where the war would have interfered with the usual registration process. On July 8, 1920 Edwin Armstrong applied for registration of his patents in Canada. This was granted on March 7, 1922, under patent number 216,321. By this time his U. S. patents were held by RCA, and in Canada the subsidiaries of the RCA partners were assigned the patent rights.

Grant, in his war service, had operated a radio installation and repair depot for the RAF. The state of radio development being what it was at the time, technicians were obviously called upon to be creative in making whatever field improvements they could to the operation of the equipment. Grant was regarded as technically skilled by his peers, although he apparently had no formal training in engineering. He was responsible for a large number of service personnel doing installations and repairs (he said 300 men in an advertising brochure in 1922), and he was commissioned Second Lieutenant in the field in 1917. He claims to have made some improvements to the functioning of radio circuits for which he was responsible, and this would seem very plausible, given the circumstances of his work.

The only invention for which documentation remains is referred to as the "clapper brake." For it, he was awarded the sum of £50 by the British government after the war. In court testimony, Grant claims that the invention is inappropriately named, and that it is in fact a circuit improvement to enhance the selectivity of receiver tuning. Could it have been an improvement to a coherer? No detailed description remains.

Essentially on the strength of his development work in radio during the war, and based on a law that protected unpatented "rights of industrial property" acquired in time of war, the Exchequer Court of Canada, on July 3, 1926, confirmed Grant's right to continue manufacturing broadcast receivers in Canada, freely using Armstrong's circuits. The Canadian Westinghouse Company appealed the decision to the Supreme Court of Canada, and on October 4, 1927, the decision was reversed. The judgment argued that the extent of the development work that Grant had conducted was insufficient to merit awarding him "rights of industrial property" to inventions that had been predominantly developed by Armstrong.

Grant never disputed the importance and the

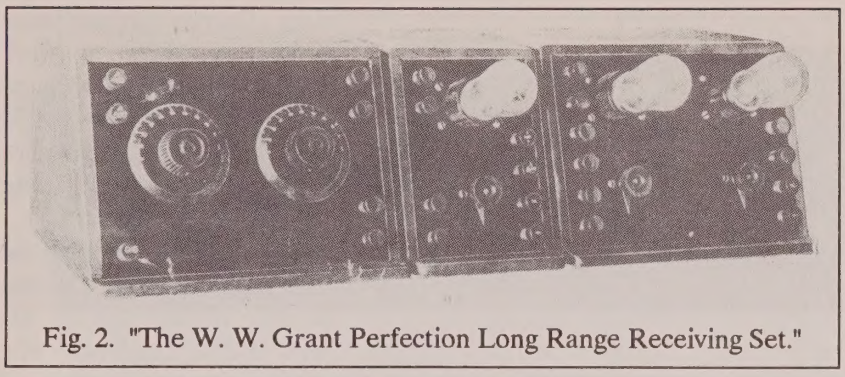


Fig. 2. "The W. W. Grant Perfection Long Range Receiving Set."

primacy of Armstrong's work. Rather, he felt that he had also made contributions to radio technology, and that under Canadian and British law he deserved access to the radio circuits that were by then in widespread use for commercial purposes after the war. Grant was very bitter about the Supreme Court decision. By then he was well established in the manufacture of broadcast receivers. He had models that used regenerative and reflex circuits, and by 1927 a superhet. Grant had to pull out of the receiver business, and returned exclusively to his practice as a broadcast engineer. He had to pay his own legal costs for the initial case, and all the costs of the appeal, and as a result had to sell his broadcast station CFCN in Calgary.

Grant was a charismatic character, and a good technical man. He had very little success in business, however, and seemed to be constantly in debt to his friends and family. He put tremendous energy into his technical work, but remained naïve and subject to being taken advantage of in business matters. There was, for example, the matter of his one-time friend Gordon Love, whose company sued him for patent violations. A year before the suit, Grant had personally sold him one of his new radios. As it later turned out, when Grant's broadcast station CFCN had to be sold to cover his debts, the buyer was Gordon Love, who had managed to remain successful in the broadcasting business during this period of turmoil for Grant.

PERSONAL HISTORY

William W. Grant was born in Gibraltar in 1892, where his father was a warrant officer in the Royal Engineers. In 1895 his father was posted to Halifax, Nova Scotia. Billie grew up in Halifax, attended public school there, and apparently tinkered with radio because, when the war broke out, he enlisted in the 1st Canadian Divisional Signal Company. He was stationed in France throughout the war. In March of 1915, he transferred to the Royal Flying Corps, and in 1917 was promoted in the field to the rank of Second Lieutenant, Equipment Officer, Wireless.

After the armistice, Grant returned to Halifax. After several months he joined the Air Board of the Canadian government. He became responsible for equipping search aircraft with radio, and with building base stations. In 1920 this job relocated him to High River, Alberta. For a time, he supplemented his government work with freelance activity - most notably, in 1921, in providing the technical capability for the Princess Theatre in Calgary to broadcast live concerts. At about the same time, he obtained a station license and built CFCN, a 50-watt broadcasting station in High River.

He was soon caught up in the commercial possibilities of broadcasting and, in 1922, resigned from the government radio service and moved his station to Calgary. In the next several years, he increased the power of his transmitter (to 500 W in 1924, to 10,000 in 1932), and built several other broadcast stations under contract (CKLC Red Deer, CJOC Lethbridge, CKUA Edmonton, CFQC Saskatoon). In 1924 he pioneered the use in Canada of phantom call letters, a device that allowed advertisers without broadcast licences to buy time slots on other stations. He also installed a monitoring station close to the U. S. border, and rebroadcast the U. S. shows while substituting their commercials with local ones.

Not only was he a chain smoker of cigarettes, but his chain smoking was developed to an interesting and imaginative degree. The cigarette was clamped permanently dead-centre in his lips, so that the end of his nose was much yellowed from the smoke, while the two corners of his mouth remained free to alternately curse, and blow ashes from the cigarette at the person talking to him. At the same time he would use both hands to massage his eyeballs which continually stung from the smoke,

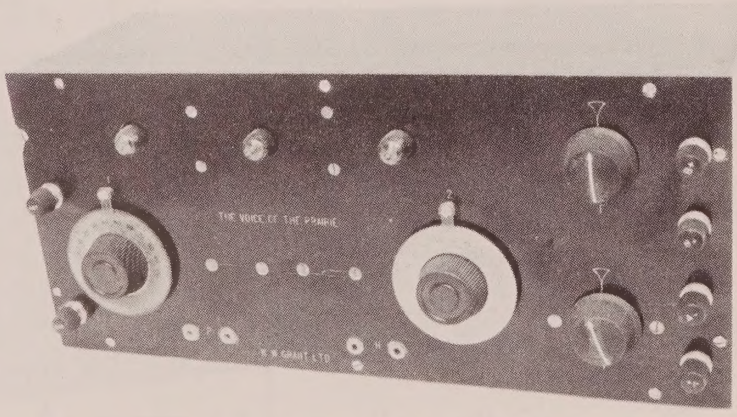


Fig. 3. The "Grant Superdyne" Receiver.

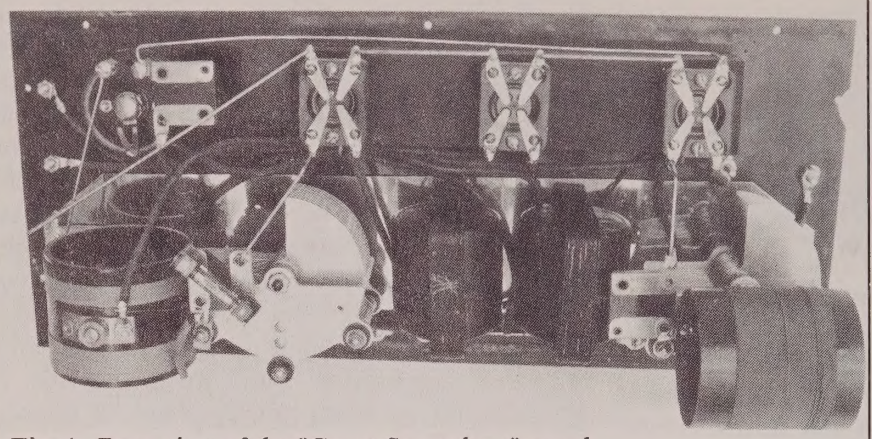


Fig. 4. Rear view of the "Grant Superdyne" panel.

cases. Do you suppose there could have been a fire? Well, there were three of them in his commercial premises, to the point where his insurers were getting nervous.

Grant never invested the energy and insight in his business affairs that he applied to his radio work. His income arrived in spurts and disappeared in spurts. He was fond of Packard cars, and had the capacity to spend lavishly even when he had little cash. After several years on his own as a radio station consultant, he joined the Canadian Broadcasting Corporation in 1935. In 1940 he obtained a leave of absence from the CBC and joined the Royal Canadian Air Force as a Pilot Officer. He spent the war assigned mostly to duties as a radio instructor, and was discharged with the rank of Squadron Leader. He then returned to the CBC, and later bought radio station CKLC in Kingston with his son Robert. He died in 1968.

thereby joggling his gold-rimmed glasses up and down over his face and forehead. He was described as "a man somewhat difficult to converse with." Being a chain smoker, he was not above appropriating his employees' cigarettes to keep a big enough supply on hand to last him through the twenty-hour day he frequently worked, thus leaving his men smokeless through the long night hours when a cantankerous transmitter needed revamping for the next day's broadcast.

One visitor to a broadcasting station Grant was operating in 1928 observed that he had heated the transmitter shack by stringing haywire around the walls, nailed to the 2-by-4s, and energised by the 220-volt power line. Then, there was fresh oil spread on the floors to reduce the shock hazard from the electrified haywire. In the same shack he was melting the contents out of old power distribution transformers, rewinding them as modulation chokes, and melting fresh beeswax back into the

MANUFACTURING

In the early days of W. W. Grant Radio Ltd., Northern Electric receivers were offered for sale. Until 1924, they were advertising the model R11 in combination with the R15 amplifier. In 1923 they also began the commercial manufacture of broadcast receivers. Eight models have been identified. The first sets were in mahogany boxes with hard-rubber sloping-front panels, and were called the "Grant Perfection" (see Figure 2). They consisted

Fig. 5. Schematic diagram of the "Grant Superdyne"/"Voice of the Prairie" used in the defense of the Canadian Westinghouse patent infringement suit.

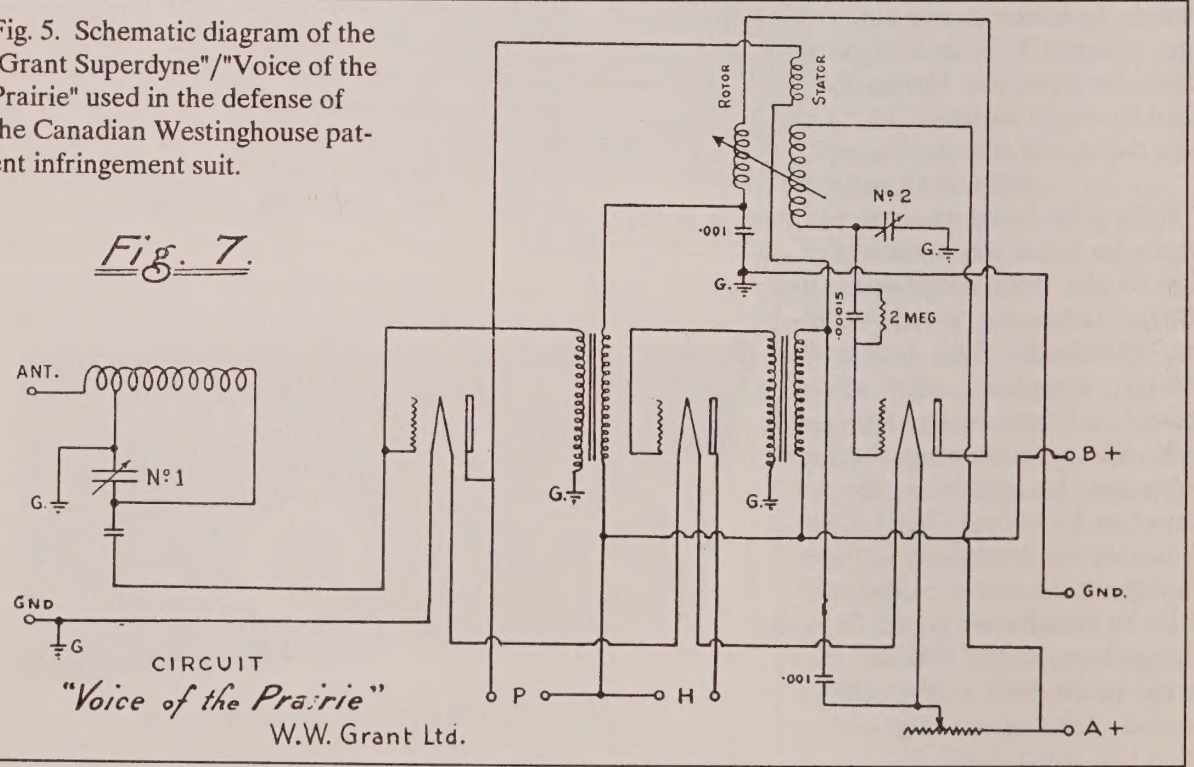


Fig. 6. "The Voice of the Prairie Four," 1927 version with etched brass panel.

of three separate boxes strapped together: a tuner, a one-tube regenerative detector and a two-stage audio amplifier. Three UV-201 tubes were provided. A crystal set was also available at this time in the same style of cabinet.

The next year, a three-tube set, called both "The Voice of the Prairie" and the "Grant Superdyne," was constructed in a single box with a vertical black bakelite panel (see Figures 3 and 4). The Grant company engraved their own panels. Three R215-A "peanut" tubes protruded through the panel, allowing the rest of the components to be enclosed permanently in the box. The coils and tuning condensers were obtained from the New York Coil Company. Evidence of opening the box would void the warranty. No schematics were provided for W. W. Grant sets, but a diagram of this one set was entered as an exhibit in the Grant vs. Westinghouse trial (see Figure 5). This three-tube set has a reflex circuit. The original price was $65 with tubes, phones, batteries and aerial equipment.

A four-peanut-tube version was introduced next, which was substantially the same set with the addition of another audio stage. In 1924 the company lost its inventory of bakelite panels in a fire. They had been stored in an unused elevator shaft. A four-tube set was brought out again in 1927 with an etched brass panel (Figure 6). The panels were purchased from the Crowe Name Plate & Mfg. Company of Chicago. This set sold for $100 including all necessary equipment and a Tower Meistersinger horn speaker. This was, again, a reflex circuit where the four tubes were advertised as providing two stages of RF amplification, a regenerative detector, and two stages of AF gain.

There was also a five-tube set, "The Voice of the Prairie Special." The early, bakelite-panel version of this set used five peanut tubes, and appeared in a fine walnut cabinet. The price was $150 including tubes, batteries, phones and a Meistersinger horn speaker. The later version of this set ("The Voice of the Prairie Five"), had an etched brass panel. The final audio stage used a UX-120 tube.

Finally, a seven-peanut-tube superhet, "The Voice of the Prairie Seven," was introduced in an elaborate walnut cabinet (Figure 7). Shortly after its introduction, Canadian Westinghouse won its appeal in the Supreme Court of Canada, and W. W. Grant Radio Ltd. ceased making broadcast receivers.

ACKNOWLEDGEMENTS

Thanks are due to Edgar Burge who provided his notes on this subject and a great deal of personal support. In the mid-1970s Ed interviewed a number of friends, family members and former employees of Grant, and has preserved a great deal of pertinent information upon which this article was largely based. Thanks are due to Bernard Payne who also provided information.

REFERENCES

Canadian Westinghouse Co., Ltd. vs. W. W. Grant Limited et al., Exchequer Court of Canada, July 3, 1926, pp. 164-170.

Canadian Westinghouse Co. vs. Grant et al., Supreme Court of Canada, Oct. 4, 1927, Dominion Law Reports (1927), 4, pp. 484-494.

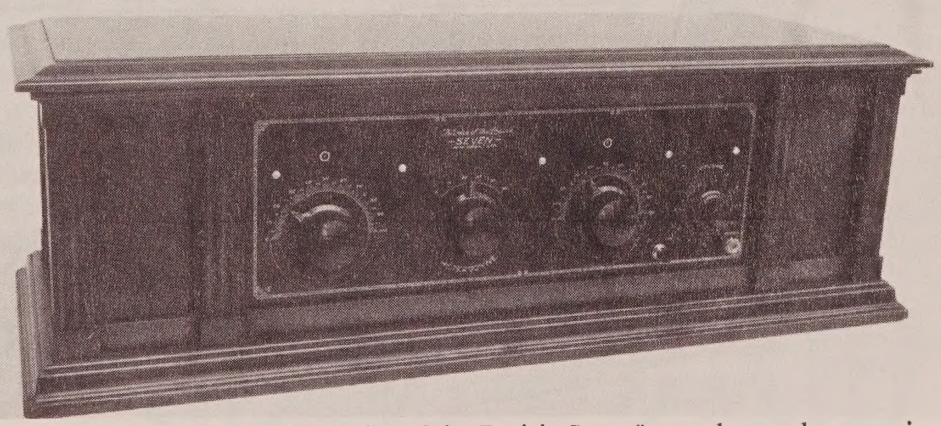


Fig. 7. "The Voice of the Prairie Seven" superheterodyne receiver.

MUSIC MASTER HORNS*

Floyd Paul, W6THU
1545 Raymond, Glendale, CA 91201

Alan Douglas
Box 225, Pocasset, MA 02559

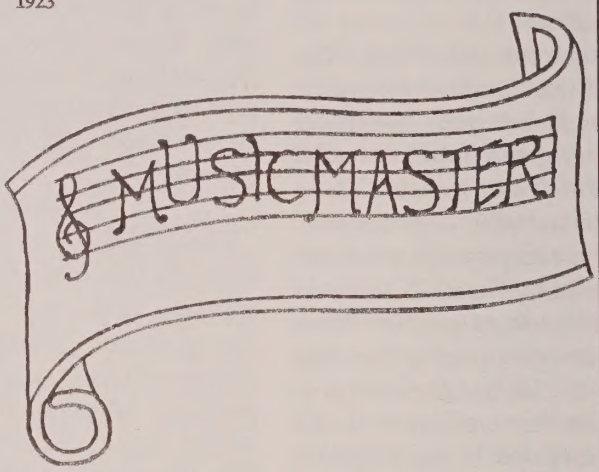
The story of Music Master began in 1908, when the Philadelphia firm of Sheip and Vandegrift acquired patent rights to a form of wooden horn and registered the trademark "Music Master." For some years afterward, they supplied these horns to phonograph manufacturers, at least until outside-horn phonos went out of style.

Enter Walter L. Eckhardt, a very successful sales executive, first with Columbia, and after 1917 with Pathé in Philadelphia. Looking for new fields to conquer, he couldn't help noticing that, as horns were vanishing from phonographs, they were miraculously reappearing with radios. Sensing a great opportunity, he formed the General Radio Corporation [not to be confused with the General Radio *Company*] in April 1922 to deal in radios and accessories.

In September he first advertised a line of radio parts in *Radio News*; by early November he was selling Music Master horns with bells made by Sheip and Vandegrift (who also lent their trademark), with drivers made by Timmons, another Philadelphia company. In October 1923 the Music Master trademark was formally re-registered for radio horns, and about January 1924 the company name changed to Music Master Corporation.

October 23, 1923 U. S. PATENT OFFICE.

Ser. No. 181,572. (CLASS 21, ELECTRICAL APPARATUS, MACHINES, AND SUPPLIES.) SHEIP AND VANDEGRIFT, INC., Philadelphia, Pa. Filed June 5, 1923



Particular description of goods: Radio Amplifier Horns.

Claims use since Nov. 9, 1922.

This was all very gratifying to Eckhardt who, as the middleman between S & V and the public, was doing quite well. His investments of $40,000 the first year, and $200,000 the second, were stated to have brought in sales of $3,700,000 (*Phonograph Journal of Canada*, May 1925, p. 40). If horns, why not radios too? Eckhardt thought that, with a short tug on his bootstraps, he could elevate himself from middleman to kingpin of a new empire.

He interested some prominent Wall Street bankers in his new venture and reorganized Music Master in January 1925. With this new capital, he acquired the 30-acre Lubin motion-picture plant at Betzwood, Pa., where he reportedly expected to produce 3,000 loudspeakers per day.

He negotiated contracts with Algonquin, Jones, Sleeper, Thermiodyne, and Ware; each to produce one or two models in the new Music Master line for the 1925-26 season. Quoting the editor of *Radio Engineering* (Aug. 1926): "He even financed some of them, for they were all wobbling financially, but he couldn't think and act for them." They couldn't meet the contracted delivery dates, leaving Music Master with lots of national advertising but nothing to sell.

Music Master went into receivership about August 1926; their last gasp was a *Radio Retailing* ad in November, by "David S. Ludlum, Trustee," offering horns. Mr. Sheip was last seen in Eckhardt's office, trying to collect a portion of his overdue accounts (interview with John Timmons, *OTB*, Sept. 1982).

General Radio Corp. (GERACO) first made 14" and 21" dia. mahogany-bell, gooseneck-styled horn speakers. By December of 1923 Geraco had added a 14" spruce-bell horn speaker to the line.

*An earlier version appeared in the *California Antique Radio Gazette*, Vol. 9, No. 2, May 1984. The Music Master history also appears in Radio Manufacturers of the 1920s, Vol. 2, used by permission.

Music Master
RADIO PRODUCTS

Photo 1 - Early Logo

Photo 2 - Another Early Logo

Photo 3 - 1924 Logo

In the spring of 1925, model numbers were being assigned to the horns, as follows:

V	Pressed-steel cabinet
VI	14" bell, mahogany and spruce
VII	21" bell, mahogany
VIII	Cabinet, mahogany
IX	14" horn, hand-painted
X	Floor pedestal, 63" high

In early production of the 14" bell models, the S & V - Music Master trademark decal was located on the outside of the wooden bell (see Photo 1). A second decal (Photo 2) was typically located on the front of the neck about halfway up the gooseneck. Note that the company was using both a spelled-out company name on one decal and the abbreviated name GERACO on the other. When the company changed its name to the Music Master Corp. in early 1924 the bell decal moved from the outside of the bell to low-center, inside the bell (Photo 3). The neck decal was dropped about this time. The necks and bases of the early horns were typically painted a semi-gloss black and lightly wrinkled. Later, Music Master Corp. used a black-and-gold stippled paint finish on necks and bases. The new finish was first shown in advertisements in mid-1925. Ornamental base sculptured designs changed fairly frequently. Four patterns have been seen.

The Model V, with pressed-steel box and wooden-bell horn, appeared in 1924. The steel box was described as mahogany-finished. Inside the case, the neck material was a pyralin substance. It provided approximately a two-foot air column from driver to bell opening. Three wood screws anchored the bell horn assembly to the rear wall of the steel cabinet.

At least four marking configurations have been identified on earphone-type drivers for GERACO and Music Master products. These, plus a fifth driver, are shown in Photos 4 and 5 (rear view and front view with tops removed). Top center is the original GERACO driver. The name "Penn Headset Co., Inc." on it is identical to the driver name at lower right, which confirms they were made by the same source, the Timmons Radio Products Corp. Mr. Timmons told author Paul that he had made

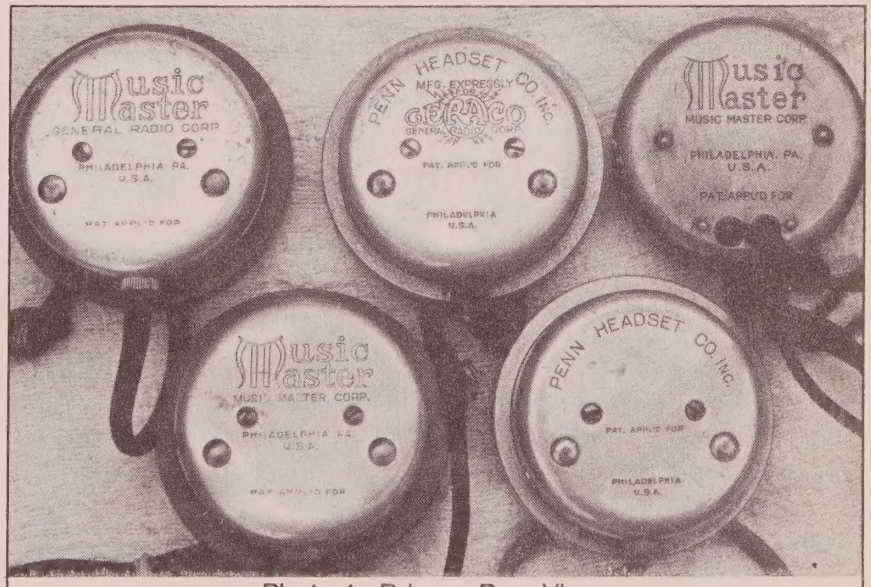


Photo 4 - Drivers, Rear View

tens of thousands, if not more than 100,000, earphone drivers for Music Master. The driver with the singular name, Penn Headset Co., Inc, was made for sale to other horn-speaker manufacturers. The earphone driver in the upper left corner came into use later. When the company changed its name to Music Master Corp., the driver pictured in the lower left of Photo 4 came into use.

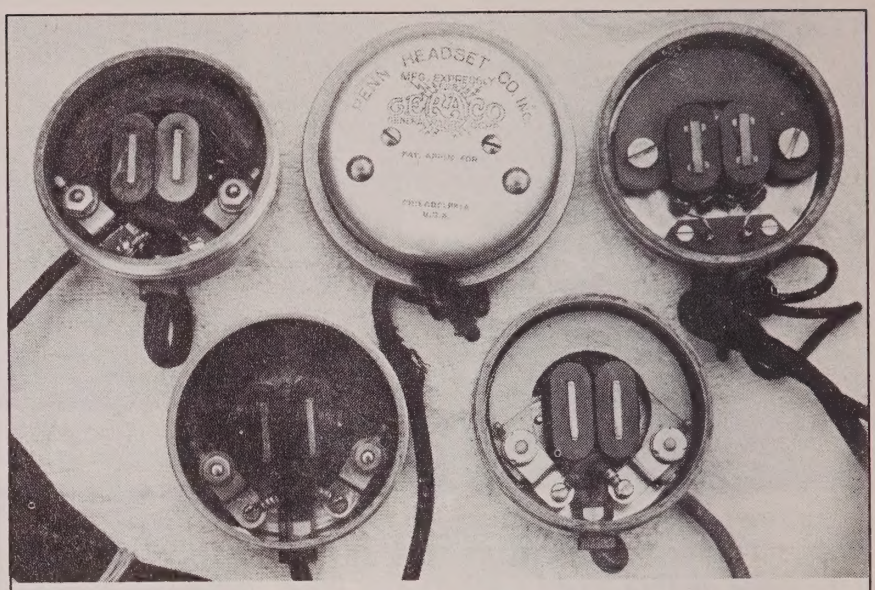


Photo 5 - Drivers, Front View

Note that the two drivers labeled "Penn Headset Co." had aluminum screw-on covers. The company changed to bakelite screw-on covers with the use of the new Music Master insignia. An unusual driver was found in author Paul's collection, in the Model V pressed-steel cabinet speaker. That is the one in the upper right corner of the picture. It will be noted that the arrangement for feeding the cord into the headset differs from the others, which had a common configuration. Also, inside the earphone housing the parts are completely different. The iron magnet is shorter than its predecessor part. The iron poles around which the coils are wound are different in length and width. The junction block for the incoming leads is different. The electrical resistance of the coils jumps dramatically from 1300 ohms (nominal) to 4000 ohms. It is believed this was the last earphone-driver design change.

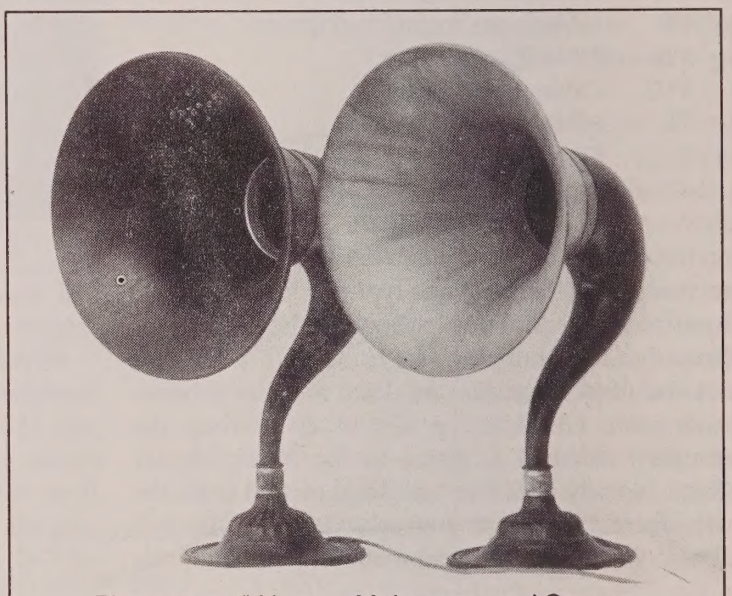


Photo 6 - 14" Horns - Mahogany and Spruce

A quantitative survey made on horn speakers on a national basis shows that GERACO and Music Master made and sold approximately 150,000 speakers in the 1922-27 time period. Photo 6 shows mahogany- and spruce-bell 14" horns, while Photo 7 depicts the 21" model.

[For the full story of Music Master's brief role as distributor of receivers and even tubes, see Vol. 2 of Alan Douglas' Radio Manufacturers of the 1920s. For "Melody Tone" speakers as imitations of Music Master, see OTB, Feb. 1990 (Vol. 30 No. 4), p. 23.]

Photo 7 - 21" Horn

Music Master
Resonant Wood Insures Natural Tone Quality

MEET THE COLLECTORS

Rodney Schrock, KD3OR
402 Lincoln St., Somerset, PA 15501

EUROPE ON ONE TUBE

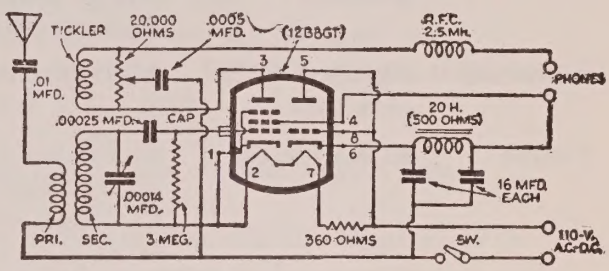
In 1946-47, when I first became interested in building radios, information on the construction of home-built sets was difficult to find. *Popular Science* often had projects and it appeared frequently on store shelves, but magazines such as *QST* and *Radio Craft* showed up rarely.

A schoolmate of mine bought a copy of Radio for the Millions, published by *Popular Science*, and lent it to me frequently. Otherwise I might have stayed in the regenerative-triode era longer than I did. It had 78 or so attractive projects for every level of builder, ranging from regenerative sets to TRFs, some superhets, and even an FM superhet.

These articles, which were taken from the monthly magazine, influenced the design and building of my homemade sets for several years. On page 9 of the book is a set I built as I left the regenerative era - its detector circuit I copied into a very successful homebrew TRF.

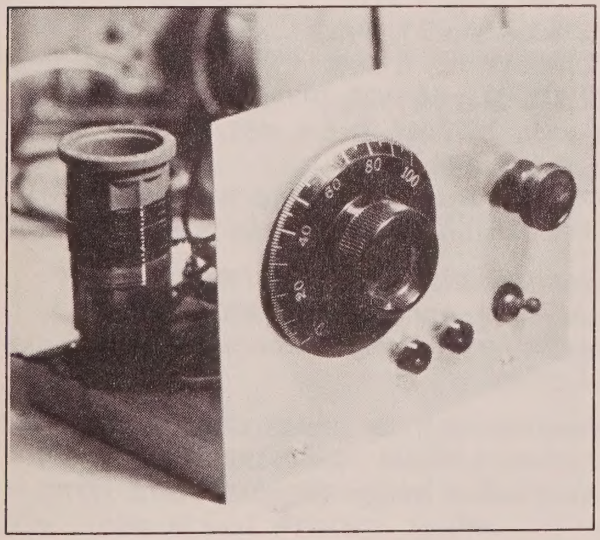
On first borrowing the book, a project that caught my eye was on page 87, titled "Europe on One Tube" - a regenerative set using the pentode section of a 12B8GT as detector and the triode part as rectifier. The rectifier was familiar, as it looked like a half-wave unit built the previous winter - really "high-tech." Then, the tube was a 56, heated by a train transformer. AC from the wall socket was applied to the plate. The other side was the negative, with B+ taken off the cathode. We tested polarity by sticking the "+" and "-" into a potato, which changed color around one of the wires. The filtering was checked with headphones, trying different combinations of chokes and electrolytics while listening to the hum.

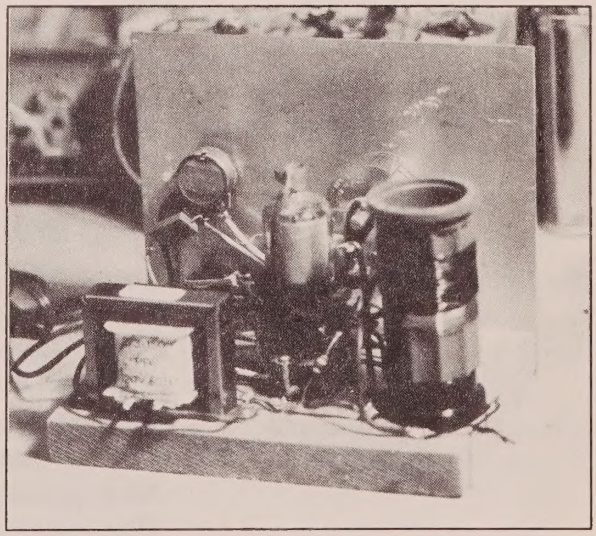
I gathered the components: an Arcturus 12B8GT with a starry sky and black outline of an observatory on the box, a Motorola car-radio choke, plug-in coils and variable condenser from previous sets. Instead of a resistor line cord, I used an old Ohmite 10-watt unit, badly overworked - it glowed red hot and charred a hole in the board. The 20-K pot stymied me for awhile, so I settled for a 25 K. I wired it. It worked - and opened the world of shortwave to me.



Some time ago, I bought a copy of Radio for the Millions and there was the article. I decided to build the circuit again - this time using a transformer to provide filament voltage. When I tried the set, Europe was still there (Switzerland), also South America. This time the 12B8GT wasn't nearly as exotic - a Cunningham in an orange and blue box - and the coils I had wound for my 1929 ham receiver.

Radio for the Millions, 1945, was a hardbound combination of two paperback collections of articles, the Popular Science Radio Annual and Popular Science Second Radio Annual (both 1943). Some of the same sets, including "Europe on One Tube," had appeared earlier, in a simpler non-photo layout, in the softbound Popular Science Third [yes, Third] Radio Make It - Fix It Annual (1942). *PS* got lots of use out of its articles! - LAS





FAMOUS MEN OF RADIO AND THEIR NOT-SO-FAMOUS INVENTIONS

David W. Kraeuter
506 E. Wheeling St., Washington, PA 15301

Many antique-radio enthusiasts know de Forest invented the audion, but few of us realize he also invented a transistor. And most of us know Frank Conrad as a KDKA founder, not as the man who designed the Aeriola Junior receiver. William Dubilier invented the mica capacitor, but he also took time out to patent a mousetrap. Listed here are these and other examples of the not-so-well-known inventions of well known radio men.

Inventor	Known For	Also Got a U. S. Patent For
Alexanderson	High-frequency generator	Receiver for color TV. No. 2,701,821. Feb. 8, 1955. Electric computer. 2,417,229. March 11, 1947. Magnetic computer. 2,984,414. May 16, 1961.
Armstrong	Superheterodyne circuit, etc.	Radio-advertisement silencer. 1,941,067. Dec. 26, 1933.
Conrad	KDKA founder	Aeriola Junior. 1,664,192. March 27, 1928. Air conditioning system. 2,205,744. June 25, 1940. Carbureter *[sic]*. 1,002,646. Sept. 5, 1911. Hand-grenade. 1,304,544. May 27, 1919. Mercury-vapor rectifier. 969,525. Sept. 6, 1910. Multiple electrode vacuum tube. 1,709,659. April 16, 1929. Refrigerator. 1,982,375. Nov. 27, 1934. Wattmeter. 1,067,311. July 15, 1913.
Davis	KDKA founder	Hand-grenade. 1,303,260. May 13, 1919. Trolley. 932,538. Aug. 31, 1909.
De Forest	Audion, talking movies	Automatic dialing device for telephones. 2,813,931. Nov. 19, 1957. Cathode-beam tube. 2,457,981. Jan. 4, 1949. Color television system. 2,452,293. Oct. 26, 1948. Endless film arrangement. 1,365,237. Jan. 11, 1921. Metallic audion. 1,230,874. June 26, 1917. Microphone. 1,834,051. Dec. 1, 1931. Photo-electric cell. 1,722,280. July 30, 1929. Score card. 1,026,433. May 14, 1912. Subterranean signaling system. 1,424,805. Aug. 8, 1922. Transistor. 2,735,049. Feb. 14, 1956.
Dubilier	Mica capacitor	Bottle cap. 2,573,111. Oct. 30, 1951. Electric sadiron. 1,757,658. May 6, 1930. Flexible track system for toy trains. 2,565,359. Aug. 21, 1951. Hearing aid. 2,566,761. Sept. 4, 1951. Insect screen. 2,278,538. April 7, 1942. Magnetic lock. 2,288,688. July 7, 1942. Mousetrap. 1,630,241. May 24, 1927. [With W. S. Mountford.] Playing card container. 2,577,007. Dec. 4, 1951. Purse. 2,288,996. July 7, 1942. Razor holder. 1,475,940. Dec. 4, 1923. [With W. S. Mountford.] System for controlling knitting. 2,199,336. May 7, 1940.
Farnsworth	Electronic TV	Color television receiver. 2,951,113. Aug. 30, 1960. Lumber drying. 3,574,949. April 13, 1971. [With F. R. Furth.] Method and apparatus for producing nuclear-fusion reactions. 3,386,883. June 4, 1968.
Fessenden	Heterodyne principle	Agricultural engineering. 1,121,722. Dec. 22, 1914. Artificial leather article. 1,357,449. Nov. 2, 1920. Book reproducible by radiant energy. 1,616,848. Feb. 8, 1927. Destroying enemy gun positions. 1,383,219. June 28, 1921.

		Wheel puller. 1,357,698. Nov. 2, 1920.
Gernsback	Publishing	Combined electric hair brush and comb. 1,016,138. Jan. 30, 1912. Depilator. 1,620,539. March 8, 1927. Hydraulic fishery. 2,718,083. Sept. 20, 1955. Postal card. 1,209,425. Dec. 19, 1916. Submersible amusement device. 1,384,750. July 19, 1921.
Hogan	W2XR founder	[Device for] Registering radio listening habits. 2,368,761. Feb. 6, 1945. Single dial tuning. 1,014,002. Jan. 9, 1912.
Jenkins	Mechanical TV	Aeroplane. 1,092,365. April 7, 1914. Billboard radio picture receiver. 1,643,660. Sept. 27, 1927. Cabin airplane ventilation. 1,840,393. Jan. 12, 1932. Cap for bottles. 919,872. April 27, 1909. Collapsible knockdown box. 947,179. Jan. 18, 1910. Device for underwater exploration. 1,156,782. Oct. 12, 1915. Key and lock. 947,913. Feb. 1, 1910. Lawnmower. 1,401,156. Dec. 27, 1921. Machine for making paper bottles. 933,460. Sept. 7, 1909. Railway tie. 1,003,751. Sept. 19, 1911. Spirally-wound collapsible receptacle. 952,258. March 15, 1910. Two-cycle gas engine. 997,195. July 4, 1911.
Kent	Radio manufacturing	Massage machine. 978,031. Dec. 6, 1910. Prismatic telescope. 1,364,381. Jan. 4, 1921. Reading apparatus. 2,325,324. July 27, 1943. Vehicle-seat. 1,417,744. May 30, 1922.
Loomis	Wireless demo	Plates for artificial teeth. 10,847. May 2, 1854.
Maxim, H. P.	ARRL founder	Building-silencer. 1,289,856. Dec. 31, 1918. Firearms silencer. Multiple patents. 1920-1930. Scabbard. 1,276,554. Aug. 20, 1918.
Pickard	Crystal detector	Electromagnetic compass. 1,472,342. Oct. 30, 1923. Phonographic machine. 1,744,838. Jan. 28, 1930. Signal system for electric railways. 786,148. March 28, 1905.
Rider	Publishing	Single button tuning control for radio sets. 2,487,760. Nov. 8, 1949. [With R. F. Koch.] Composite test probe. 2,488,328. Nov. 15, 1949.
Sarnoff	RCA founder	Early warning relay system. 2,571,386. Oct. 16, 1951. Secret radio signaling system. 2,455,443. Dec. 7, 1948.
Stone	Radio telegraphy and telephony	Re-enforced soap cake. 1,997,474. April 9, 1935.
Tuska	Radio manufacture	Refrigeration system. 2,042,568. June 2, 1936.
Victoreen	Radio manufacture	Geiger tube. 2,542,440. Feb. 20, 1951. [With R. W. Barton.] Hydraulically expandable earpiece. 3,602,654. Aug. 31, 1971. Pocket ionization chamber. 2,756,346. July 24, 1956.
Zworykin	Image Orthicon	Electronic reading aid for the blind. 2,457,099. Dec. 21, 1948. [With L. E. Flory.] Interferometer microphone. 1,709,762. April 16, 1929. Mercury-arc device. 1,696,023. Dec. 18, 1928. Secret television systems. 2,757,226. July 31, 1956. Traffic supervisor. 1,743,175. Jan. 14, 1930. [With R. J. Wensley.]

Copies of patents may be ordered from the Commissioner of Patents and Trademarks, Washington, DC 20231. Copies are $1.50 per patent postpaid, and should be ordered by patent number. Patents may also be consulted and photocopied at Patent Depository Libraries listed on pages 189-190 of AWA Review, Volume 5.

THE VACUUM TUBE

EDITED BY

BRO. PATRICK DOWD, F.S.C., W2GK

THE DE FOREST SPHERICAL AMPLIFIER

Jerry Vanicek

P. O. Box 4743, Chicago, IL 60680

Few collectors are aware of the common form of the de Forest spherical amplifier. At antique radio swapmeets, good spherical amplifiers are often represented as audions containing only one good filament. Confusion in identifying audions is due to the lack of surviving factory labeling, identical internal construction and an incorrect assumption of the tube's condition.

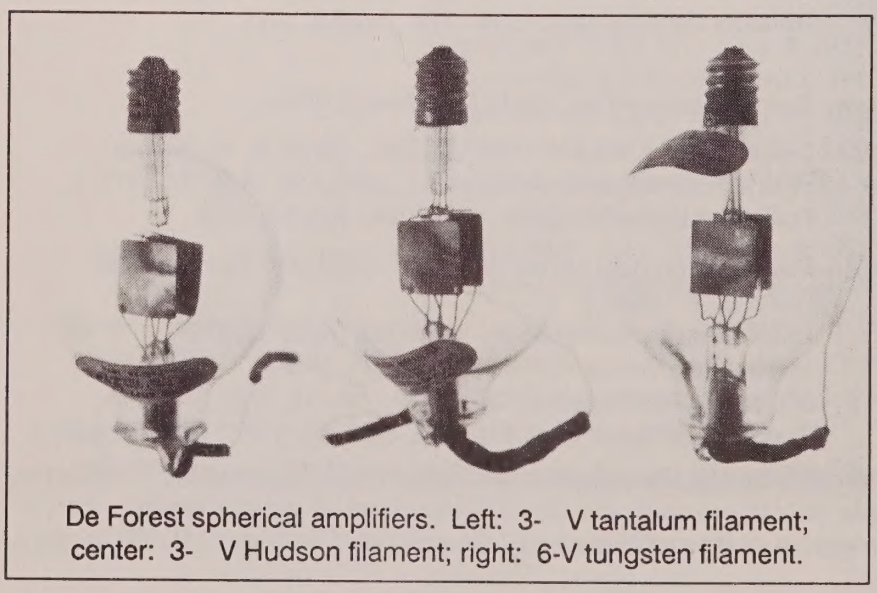
Most spherical audions contain two filament loops. In *detectors*, the unconnected end of the second filament loop projects from the candelabra base. A two-filament tube is created. After the first filament expires, the second one is activated by wrapping its free end around the base shell. The wire is then held in place with a rubber band. To insure a low resistance contact, some amateurs soldered the free wire to the shell.

In some of the earliest spherical detectors, the unconnected wire is insulated. Possibly to simplify manufacture, the insulated wire was soon replaced with a bare copper wire. A strip of insulating material separated the bare wire from the base shell.

Most spherical *amplifiers* also contain two filament loops. The amplifiers appear to be identical to double audions in internal construction. Amplifiers were available with a tantalum, a tungsten or a Hudson filament. Because of its short life, the tantalum-filament amplifier was discontinued. The major difference between most spherical *amplifiers* and most *detectors* is in the base connection. Possibly to increase emission, both amplifier filament loops were burned simultaneously. The amplifier audions are identified by their lack of an insulating strip and by the soldered base-shell connection of the free end of the wire to the second filament loop. The presence of two soldered wires to the base shell indicates that both filament loops are probably connected in parallel.

Amateur radio operators liked the idea of the spare filament in the audion detector. The spherical amplifier was claimed to have a special construction and a life equal to that of the spherical detector. De Forest Bulletin B-16 states that the amplifiers operate "at a lower filament temperature than audion detector bulbs." The tantalum- and Hudson-filament audions (photo, left and center) operate at a 3-½ V filament potential, comparable to that of a similar detector. Bulletin A-17 states "Amplifier bulbs are supplied only in 'X' grade." These two statements appear to be contradictory as "X" grade audions were not specifically manufactured as such, but were tubes selected from the general manufacturing process.

Bulletin B-16 mentions another form of spherical audion, called the "Ultraudion Bulb." Ultraudions were tubes that were factory selected to insure their oscillation in the ultraudion circuit. If the paper labels were removed, the spherical ultraudions and amplifier audions would appear to be physically identical.



De Forest spherical amplifiers. Left: 3- V tantalum filament; center: 3- V Hudson filament; right: 6-V tungsten filament.

REFERENCES

Bulletins A-17, B-15, B-16, De Forest Radio Telephone and Telegraph Co., New York.

G. F. J. Tyne, Saga of the Vacuum Tube, Howard W. Sams & Co., Indianapolis, 1977.

[Lauren Peckham, another collector who knows his Audions, points out that, with the general obscurity of de Forest's operations and nonuniformity of the product line, much of our understanding of these tubes is necessarily inferential. For example, collec-

(Continued on p. 52)

RECENT RADIO AND ENTERTAINER OBITUARIES

Charles Griffen, W1GYR
1225 New Britain Ave., West Hartford, CT 06110

Charles Allard, 71, founder of the Allarcom Broadcasting Co. of Edmonton.

Lee B. Bartell, 81, broadcasting pioneer; 1947 founder of Bartell Broadcasting Inc. with stations in Wisconsin.

John T. Campbell, 71, founder and president of WPLM, Plymouth, MA. He started the station in 1955 and opened a sports network in 1983, holding rights to Red Sox and Bruins games until 1989.

LaRue **Courson**, 68, retired NAB VP; served 33 years with the Association.

Capt. George Clark, KH6BF, 93, WW I Navy shipboard radio operator; later station engineer for the Federal Telegraph Co., then Honolulu chief engineer for Mackay Radio.

Lester Cushman, W1BX, 86, operator of the Cushman Radio Co.; founder of a business to make and install TV antennas; best known for amateur VHF antennas under the Cush-craft name.

Charles Dickoff, 63, radio broadcaster. In 1951 built and managed WBEV (WI); was majority owner since 1959 of WEAQ-WIAL (WI).

Howard B. Frazier, 86, radio pioneer. Started WSNJ (Bridgeton, NJ) in 1937; later joined the National Association of Broadcasters as Director of Engineering; edited the NAB Engineering Handbook. In 1946 he founded Frazier & Peter Inc. (later Frazier Gross & Clay), a Washington radio-TV management consulting firm where he was president until 1972.

Jack Goodrich, 91, film-sound recording pioneer. Beginning as an engineer at WLS (Chicago), went to Hollywood in 1929 and worked as a sound engineer for many studios.

Walt Henry, 80, W6ZN, co-founder of Henry Radio. With his brother Bob, joined the business in 1961. Brother Ted still manages the Henry operation in California.

James MacLachlan, 57, college professor who devised a time-compression method used in TV and radio. The technique fits programs into set blocks of time without cutting content.

August C. Meyer, 91, broadcaster. Started Midwest Television Inc. in 1952 with stations in IL and CA.

Royal Mumford, W3CU, ca. 92, amateur beginning in 1912; headed the radar school at Mare Island, CA in WW II.

Peter H. Starr, 49, president, Southern Starr Broadcasting Group.

Aaron Rosenbloom, 87, co-founder of Rose Records, a chain of 35 record stores in the Chicago area. In 1931, he and brother Merrill opened Rose Records as "Rose Radio," retailing Detrola, Emerson, and Zenith models.

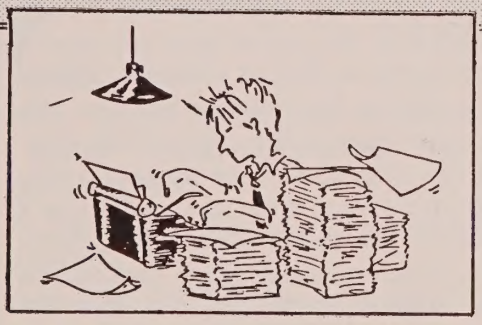
Lucille Powell **Singleton**, 98, one-time CBS Radio executive. She joined CBS in 1929 auditioning vocalists and supervising staff singers; retired in 1961 as Manager, CBS Radio Record Library.

Donald Suffield, 100, English developer who patented talking movie equipment in the early '20s. With partner H. A. Johnson, he installed gear in European movie houses for French and British Phototone companies.

(Thanks to No. Calif. DX Club "DXer" and Tina Wiepert for extra source material.)

IN-HOUSE

Bruce Kelley



WHAT'S IT WORTH? - I frequently receive letters asking the value of an old broadcast receiver - a Philco console, an Atwater Kent or a five-tube battery set. Realistically, one can't give even an approximate value without seeing the set. As an example, let's take the popular Radiola III, which is worth anywhere from, say, $24 to $140. $25: no tubes, open audio transformer (very common with these sets), poor cabinet and dial markings; $140: with two good brass-based WD-11 tubes, good transformer, nice cabinet and dial markings (rare). In between are "good" sets with an open transformer, or no tubes (or later WD-11s).

In addition, one must consider the circumstances of sale. If there are collectors vying for a certain receiver, the selling price can be high. If the interest is minimal, the set may go for a fraction of its "true" value.

PARTS AND TUBES - Where does one find replacement parts for tube receivers? Radio supply stores started to disappear with the popularity of solid-state gear in the '60s. The old reliable parts houses that remain, like Allied Radio of Chicago (now Allied Electronics) no long handle "tube" parts. The answer: radio flea markets!

A recent event in Rochester, NY, attracted 7000 wandering through acres of vendors selling everything from tubes to computer parts. (Let's not talk

(Continued on p. 52)

THE VALUE OF QSTs

Bruce Kelley

I am sure you have seen ads seeking early *QST* magazines. *QST* leads the market for radio publications, although one certainly finds requests for *Modern Electrics*, *Radio Broadcast*, *Radio News*, and the later *Radio Retailing*.

As with all publications, the early years are the most sought-after. The first issue was printed in December, 1915. The American Radio Relay League has published *QST* continuously except for a brief period during WW I.

The first ten issues had a one-color cover (light blue). The cover for October, 1916 was the first multi-color. It is relatively easy to duplicate the early single-color cover and many copies have been reproduced. A fake can be easily determined by close examination and comparing with an original. Reproductions have little value except for reference.

Bound Volume 1, autographed and donated to AWA by Clarence Tuska, *QST* co-founder and first editor.

The value of any collectible literature is determined by the number available (printed) and condition. Few QSTs were printed pre-WW I and those that have survived are usually in poor condition with damaged or missing covers.

Judging from letters, sales listings and conversations with collectors, I estimate that a near-perfect set of QSTs is worth over $3000. However, in the 1990 Museum de-accession sale, an alert bidder got the first four volumes for $750 (OTB, May 1990, p. 7). A near-perfect early QST sells for around $100, while value decreases to $1.50 or so per issue by 1940. The typical cutoff issue for a "set" is December 1975, when the magazine was changed to its present large format. Later years are not yet considered collectible. As of 1972, there were 22 known full sets, whereas more complete collections have probably been built up since.

A near-perfect copy is one with untorn, non-faded cover, having good binding, and without torn or soiled pages. Magazines in this condition are seldom found. The value is greater if they are in original bindings by year. As with books, the cover and pages should be devoid of all marking or writing unless it is an author's signature, which enhances the value.

BEWARE of "BAN OFF!"

Collectors of *QST* magazines prize the pink insert from the October, 1919 issue with the heading "BAN OFF!" and stating, "The job is done, and the ARRL did it!" This refers, of course, to the reinstatement of amateur operation after the complete shutdown of WW I.

Since this separate single-sheet supplement is easy to reproduce with present-day printing technology, Jim Maxwell, W6CF, became suspicious of one he purchased, since the supplier had a quantity without the accompanying 1919 *QST*s.

Fortunately, he had an authentic original from a QST he had obtained from an old-timer many years earlier. By carefully comparing the original with the suspicious one, he detected several differences indicating a counterfeit. The fakes are excellent photo-reproductions requiring close comparison with an original. Noted may be a slight difference in size and in shade of pink, as well as several printing pickup flaws.

Beware! The copy you purchase at a hefty price may be worth no more than the paper it is printed on. - BK

ANNUAL CONFERENCE

The Antique Wireless Association

"An amateur organization devoted to the history of wireless"

THRUWAY MARRIOTT, ROCHESTER, NY, SEPT. 23-26, 1992

This is our 31st Annual Conference. Collectors and history enthusiasts will convene, exchange equipment, and learn more about the development of radio and electronics. Rochester (Henrietta) is just north of upstate New York's beautiful Finger Lakes region, easily reached by car or plane. For those who plan to fly, shuttle service is offered from the airport (specify the *Thruway* Marriott). The hotel offers high-quality restaurant facilities, and other eating places are in the neighborhood.

Members are requested to register in advance and save time. This will allow advance preparation of flea-market cards and other material for quick check-in. Preregistration can be made through Richard Ransley, Box 41, Sodus, NY 15441 before Sept. 8. Register early! Unlimited registration at the door.

It is planned to have AWA Review, Vol. 7, available, along with earlier volumes and *OTB* back issues. A "Book Fair" in its own room will be open during the Conference.

The special theme for this year is "The General Electric Company."

AWA ELECTRONIC COMMUNICATION MUSEUM

Bloomfield, NY

Off NY 5/US 20

VISITING HOURS

Sunday, Sept. 18, 2-5 PM

Wednesday, Sept. 21, 2-4 and 7-9 PM

Thursday, Sept. 22, 9-11 AM

Sunday, Sept. 25, 2-5 PM

WEDNESDAY

8:00 AM FLEA MARKET (through 5:00 Saturday). Expanded food service will be available on the grounds.

8:00-5:00 REGISTRATION for Conference and Flea Market - Assembly Corridor. (See hotel floor plan on p. 31.)

10:00 - 5:00 SLIDE VIDEO playing continuously - Iroquois Ballroom.

7:00-9:00 REGISTRATION - Assembly Corridor.

7:00-9:00 AWA MUSEUM open at Bloomfield (ex-East Bloomfield), 19 miles southeast, off NY 5 & US 20, about 30 minutes' drive.

THURSDAY

8:00-9:00 AM CHECK-IN of equipment for Communications Equipment auction - Cayuga-Mohawk Rooms.

8:30 - 12:00 REGISTRATION - Assembly Corridor.

8:30 BOOK FAIR opens - Pre-assembly Court.

8:30 BUS DEPARTS for AWA Museum from front of hotel. One trip, signed-up in advance, $5 to offset charter cost.

9:00-11:00 AWA MUSEUM open.

9:00 COMMUNICATION EQUIPMENT AUCTION - Cayuga-Mohawk Rooms. Col. Ed Gable, K2MP, auctioneer. Communications equipment made after 1930, such as receivers and transmitters by National, Hallicrafters, or Hammarlund. No bidding card needed; sales are seller-to-buyer.

11:00 NEWS FOR SWLs - (Cayuga-Mohawk-Oneida Rooms). Discussion led by Bart Lee.

1:00 PM - 5:00 REGISTRATION - Assembly Corridor.

1:00 CHANGING RADIO STYLES, 1920s TO 1960s - Cayuga-Mohawk-Onondaga Rooms. Marty Bunis will cover the evolution of radio

cabinet design over this 40-year period.

3:00 THE GE TOP-HAT TRANSISTOR - Iroquois Ballroom (Cayuga-Mohawk-Onondaga Rooms). Dwight Jones of GE will cover transistor development from the "top-hat" case to the IC, plus the famous GE Transistor Manual.

7:00 ENTERTAINMENT FOR ALL - Slide show by Bruce Kelley (Mohawk-Cayuga Rooms).

7:00-10:00 AUCTION check-in, registration, and preview - Iroquois Ballroom (at Seneca end). Registration and bidding card are good for all auctions on Friday. Fee of $2 credited toward any purchase. (Note: this is the check-in time for the general auction.)

7:00-10:00 OLD-EQUIPMENT CONTEST: check-in of entries - Henrietta Ballroom (Salons A, B). This is the time to bring in displays.

FRIDAY

8:00 AUCTION PREVIEW (buyer registration and preview only) - Iroquois Ballroom.

8:00 BOOK FAIR opens - Pre-assembly Court.

8:00 - 11:00 Equipment Contest judging.

8:30 AM ANNUAL SIGHTSEEING EXCURSION- Finger Lakes boat cruise, lunch, winery tour, etc. ($49). Meet in the hotel lobby.

8:30 - 12:00 REGISTRATION - Assembly Corridor.

9:00 VACUUM-TUBE AUCTION - Iroquois Ballroom. Col. Bruce Roloson, auctioneer.

10:30 (±) PAPER-COLLECTABLES AUCTION - Iroquois Ballroom, continuing from tubes.

11:00 (±) to NOON GENERAL AUCTION - Iroquois Ballroom, continuing from paper goods.

11:00 - 12:00 EQUIPMENT CONTEST entries open for viewing - Henrietta Ballroom.

1:00 PM - 5:00 EQUIPMENT CONTEST viewing - Henrietta Ballroom.

1:00 - 5:00 REGISTRATION - Assembly Corridor.

1:00 - 4:30 PM GENERAL AUCTION continues.

1:00 - 5:00 EQUIPMENT CONTEST viewing - Henrietta Ballroom.

4:00 AMATEUR RADIO SEMINAR - Iroquois Ballroom. W2ICE and W2ER will review the '92 OT Contest and the AWA Net(s). Bring an oldie piece of amateur gear to show!.

6:30 HAPPY HOUR - Preassembly Court

7:00 EQUIPMENT-CONTEST AWARDS DINNER - Iroquois Ballroom. Cash bar. "Old-Time Radio Shows" ("Duffy's Tavern"; "Gunsmoke") by Gary Yoggy and the Elmira Little Theater.

9:00 - 11:00 EQUIPMENT CONTEST viewing - Henrietta Ballroom.

9:00 - 10:00 AUCTION PAYMENT - Assembly Corridor.

11:00-12:00 EQUIPMENT CONTEST pickup.

SATURDAY

8:00 EQUIPMENT CONTEST pickup.

8:30 - 12:00 REGISTRATION - Assembly Corridor.

9:00 - 120 YEARS OF BRASS POUNDING - Cayuga-Mohawk-Oneida Rooms. Bruce Kelley will cover wire/radio telegraph history and its crucial instrument, the key.

10:30 HISTORICAL SKETCH OF GE - Cayuga-Mohawk-Oneida Rooms. John Anderson, leading historian, will address the central theme of this year's conference, GE electronics, 1900-1980.

12:00 LADIES' LUNCHEON - Iroquois Ballroom.

1:30 PM THE DYNATRON TUBE OF A. W. HULL - Iroquois Ballroom (Cayuga-Mohawk-Oneida Rooms). Robert Miller will describe this 1920s development with a demonstration.

3:00 W. R. G. BAKER OF GENERAL ELECTRIC - Cayuga-Mohawk-Oneida Rooms. Author Tom Lewis will give a biography of GE's famous engineering vice president.

5:30 - 7:00 MIXER - Pre-Assembly Court. Members can relax with conference speakers, AWA staff, etc. Cash bar.

7:00 GRAND BANQUET - Henrietta Ballroom. Bruce Roloson, M. C. and guest speaker. The grand finale! An evening of fun and fellowship. Plaque awards plus a general-interest program.

SUNDAY

2:00 - 5:00 PM - MUSEUM open.

RULES AND CONDITIONS

EVENTS: Admittance to any activity requires a registration badge. **FLEA MARKET:** New York State tax forms will be available; AWA not responsible for sales or sales tax. Neither AWA nor the Marriott is responsible for security of personal property in the flea-market area. We are asked to confine market activity to the designated area; in particular, to avoid the NY State Thruway right-of-way nearby. KOA and other campgrounds are available in the vicinity. *No overnight sleeping in the flea-market area.* These rules will be enforced strictly on hotel property; please cooperate. **AUCTIONS:** 10% of all auction sales donated to AWA Museum Fund. AWA not responsible for tax or merchandise on any auction. **COMMUNICATIONS EQUIPMENT AUCTION:** *Comm gear only, please*; no test equipment, broadcast items, literature, parts, or other unrelated items. **GENERAL AUCTION:** No consoles, boxes of magazines, non-"antique" items, or junk.

1992 AWA CONFERENCE - EASY REFERENCE

	WEDNESDAY SEPT. 23	THURSDAY SEPT. 24	FRIDAY SEPT. 25	SATURDAY SEPT. 26
8:00	Registration Open Flea Market Open	Checkin for Comm.-Eqpt Auction Book Fair	Auction Preview Contest Judging Book Fair	Contest Pickup
8:30		Registration Open Bus to Museum	Registration Open Annual Excursion	Registration Open
9:00		Comm.-Eqpt Auction Museum Open	Tube Auction	Brass Pounding
10:00	Slide Video			
10:30			Paper Auction	History of GE
11:00		News for SWLs	General Auction Contest Viewing	
12:00				Ladies' Lunch
1:00	Registration Open	Registration Open Changing Radio Styles	Registration Open General Auction Contest Viewing	
1:30				Hull's Dynatron
2:00				
3:00		Top-Hat Transistor		W. R. G. Baker of GE
4:00			Amateur Radio	
5:00				
5:30				Mixer
6:30			Happy Hour	
7:00	Registration Open Museum Open	Main Auction Checkin Kelley Slide Show Contest Checkin	Awards Dinner	Grand Banquet
8:00				
9:00			Contest Viewing Auction Payment	
10:00				
11:00			Contest Pickup	

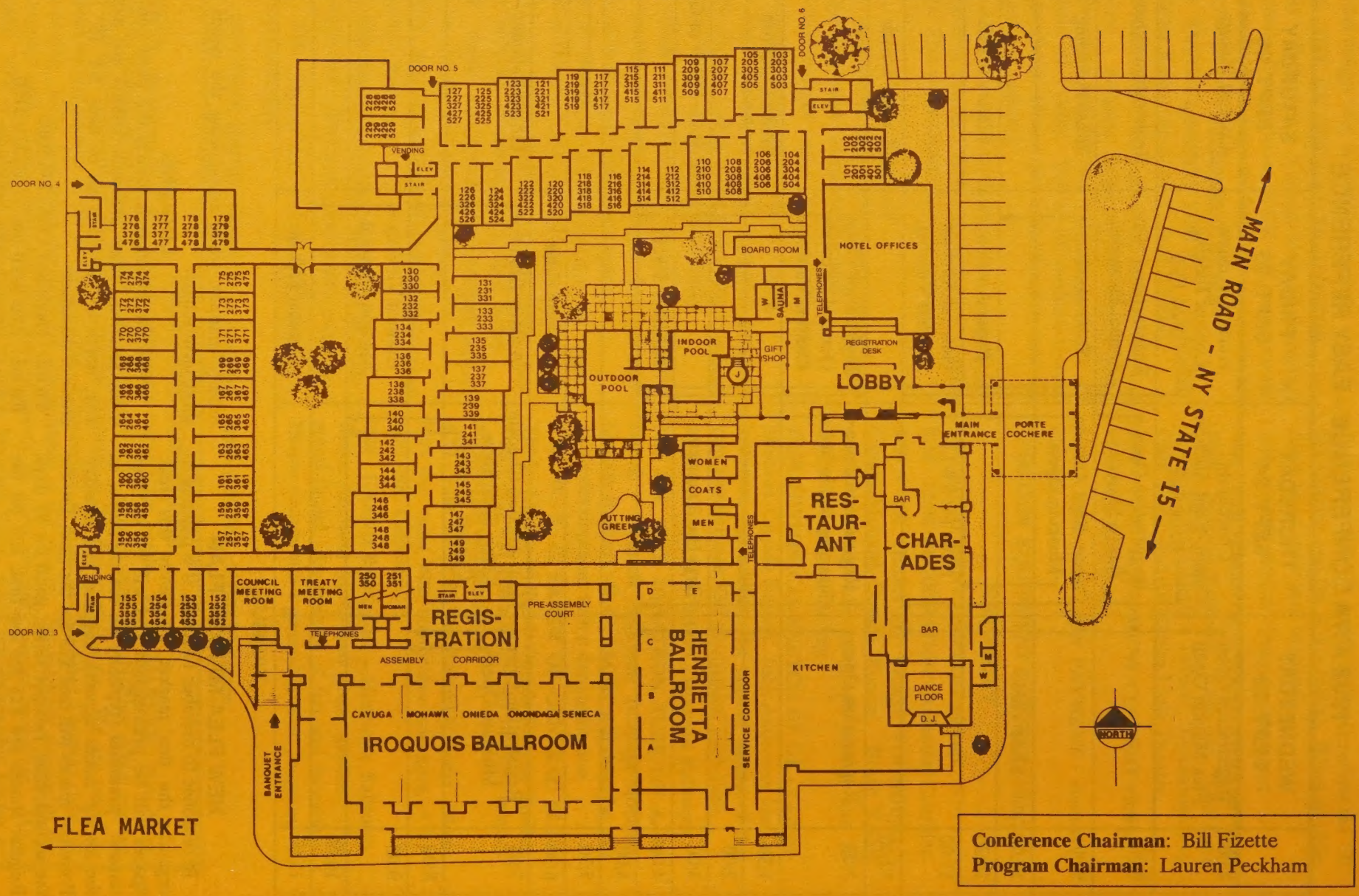
NEW FLEA-MARKET PLAN

In response to member requests, it is planned to organize the flea market differently this year. Spaces will be preassigned and will be in three classes: **premium** (typically on the perimeter of the lot for easier access), **regular**, and **one-day**. Premium spaces will cost $25 for the first, $40 for the second; max. two per seller; good for all days. Regular spaces are $15 for the first, $20 for the second, $30 for the third; max. three per seller; good for all days. One-day spaces are $10 per day, max. one per seller. This plan is intended to get the greatest number of vendors into the lot in an orderly manner, while recognizing the needs of short-term sellers.

LODGING

While the Marriott is clearly the most convenient location, other accommodations are available, north of the hotel on or near NY 15. In order of distance:

0.6 mi.: Day's Inn, (716) 334-9300
0.8 mi.: Red Roof Inn, (716) 359-1100
1.0 mi.: Microtel, (716) 334-4000
1.0 mi.: Highlands Motor Inn, (716) 334-4280
1.1 mi.: Super 8 Motel, (716) 359-1630
1.9 mi.: Dorkat Motel, (716) 334-7000



Conference Chairman: Bill Fizette
Program Chairman: Lauren Peckham

OLD-EQUIPMENT CONTEST

Ralph Williams, N3VT, Chairman

Special Theme: General Electric Co.

CONDITIONS

Location: Henrietta Ballroom, Salons A and B. Guard on duty at all times. **Check-In**: Thursday, 7-10 PM. This is the **only** time when entries will be received. **Conditions**: Participants may enter a maximum of three categories. Please provide security for small items via suitable display cases. Equipment to be removed by 11 AM Saturday.

PLAQUE AWARDS

Exhibit Award: "For Best Presentation"
Eunice Thompson Award: "Best of Show"
Elle Craftsman: "Best Homemade Receiver"
Transmitter Award: "Best Homemade or Restored Transmitter"

CATEGORIES

1. GE COMMERCIAL EQUIPMENT OF ANY PERIOD. Beginning as an electrical-equipment maker, GE touched nearly every field of communications, including broadcasting, and changed American Marconi into RCA. Many artifacts of GE history are privately held. Bring in your choicest pieces and show the breadth of GE's activities. Did you know that GE was one of the earliest companies in power-line radio for supervisory control of power systems? Test equipment and shipboard comm gear belong in this category. If this group becomes too diverse we will divide it.

2. GE TUBES. Few companies worldwide offer a broader history of the magic found in a glass bottle. From the glowing filament that challenged Edison, through X-ray tubes and radio amplifiers to power rectifiers, thyratrons, microwave amplifiers and oscillators, GE did it all. Don't forget non-glass tubes: bring a display of metal tubes or ceramics. GE made enough different examples of tubes to make a contest out of just this category.

3A, 3B. GE HOME RECEIVERS FROM THE 1920s AND 1930s (TWO CATEGORIES). In the beginning of entertainment radio, RCA was the sales agency for receivers produced by GE, Westinghouse and WSA. In the late '20s GE sold sets under its own name. Sets telling the story of the first 20 years are invited for these categories, one for sets built **before the breakup** of the Big Three and the other **for those that came after**. All sets must be traceable to GE manufacture. The Radiola IV, for example, has the GE monogram molded into its knobs.

4. GE HOME RECEIVERS, POST WW II. Some very interesting receivers were built after WW II. GE was big in transistor sets, portables, stylish table models and consoles. With our new facilities we have space for your best.

5. GE TELEVISION EQUIPMENT, FOR TRANSMISSION AND RECEPTION. General Electric was highly active in TV development. Because of patent agreements, much GE material bears more than a passing resemblance to RCA's. Pick-up, transmission, control, and reception gear is now historical. If you have an outstanding receiver, or some picture-processing equipment, it fits here.

6. GE MILITARY EQUIPMENT. Much of America's electronic strength in both world wars resulted from GE's development and manufacturing capability. Artifacts and illustrative documents about GE's war work can bring this category to life. Although we cannot handle a complete radar like the SCR-584, we welcome a part, e. g., the Amplidynes or tech manuals. Another good entry might be one of the many military radio receivers or transmitters.

7. GE DOCUMENTS AND ADVERTISING. In this category, pictures, biographical material and similar software are expected. Here is the place to tell the story of Alexanderson, or to detail a part of that story. Three other famous GE people are Edison, Coolidge and White. How about the stories of WGY, WGFM and WRGB?

8. PASSIVE RECEIVERS. Any detecting device, not including vacuum tubes or solid-state amplifying devices, whose purpose is to convert radio energy into intelligence is sought.

9. ONE- AND TWO-TUBE RECEIVERS. Any receiver using one or two tubes. A tube that includes more than one electron stream in a single envelope will count as one tube.

10. THREE-TUBE SETS. The detector-two-stage is found most often here but reflexes and special-circuit sets are sought.

11. FOUR- AND FIVE-TUBE RECEIVERS. Three-dialers, electric sets with some special feature, and others from all periods can fit here.

12. SIX-OR-MORE-TUBE RECEIVERS. Superhets are the usual entries here, but many others qualify, especially the electric radios of the '30s. Most communication receivers can be entered.

13. SPARK TRANSMITTERS AND ARTIFACTS. Don't hesitate to enter a major piece of spark gear if you think it is rare or significant.

14. TUBE TRANSMITTERS. Some of the sets for this class are old, some not so old, most home-built. While most entries are amateur-operated, commercial equipment is welcome.

NOTE

Bring *any* GE item that fascinates you. Display it in a small presentation of what it is and why you treasure it. You could return it to your collection with a ribbon telling everyone how much your work was appreciated. The factor counting highest in awarding ribbons in GE categories will be how the entry adds to our knowledge of GE's contributions to radio.

THE MAILBAG

Readers' comments on early radio topics are welcome. Because of space limitations, letters that are published may have to be edited. Send all material to the Editor.

NATIONAL AND THE AN/URT-22

While reading the May *OTB*, I was excited by the brief text and photos entitled "The End of National" on page 21. Of special interest was the picture of the AN/URT-22 HF transmitter because, while employed by National from 1967-70 I led the design team that developed this unit. The transmitter shown, the "first article" model, is the only one ever built, as National Radio went into Chapter 11 just before approval for production was to be received from the U. S. Navy.

As Project Engineer for the AN/URT-22, I have a store of knowledge which may be of great value to whoever bought the transmitter at the auction, information which I would be happy to pass on gratis. Perhaps *OTB* readers or anyone who attended the auction know who bought it and can forward the information to me via phone at (516) 777-8900 [day] or (516) 462-2419 [evening], or by mail to: Ron Kohn, Vice President, Comtech Microwave Corp., 105 Baylis Rd., Melville, NY 11747.

To clarify the capabilities of the AN/URT-22: it was a 5-kW PEP, 2.5-kW average HF transmitter, designed for highly linear operation on independent-sideband ground-to-air circuits. The set was automatically tuned and remotely controlled, employing vapor-phase cooling of an Eimac tetrode with an integral boiler-anode. The cooling system used distilled, deionized water supplied to the boiler from a Lexan tub. Steam exited "vapor up" from the boiler into the condenser input via a telescoping Teflon tube, condensed within the radiator (clearly shown in the *OTB* photo) and returned to the tub by gravity flow from the output manifold. A Rotron propeller fan pulled air through the radiator front-to-rear; PA filament and RF driver cooling was provided by a small centrifugal blower. **Ron Kohn**

Letters have a strong influence.

ANOTHER RARE RECEIVER

I'm writing a rather tardy postscript to ["Communication Receivers in Rider's and Sams'"], *OTB*, Vol. 32, No. 1 (May '91) on pages 16-17. Please look in Rider's Vol. 9 for a Pierson-DeLane PR-15. This set first saw light as a Patterson PR-15; however, Patterson sold the right to make this set to its designer, Carl Pierson, hence the name change. There were some physical changes, such as an oval bezel for the Patterson and a rectangular bezel for the Pierson-DeLane. **Thomas Peters**

SPARKS AND DREAMS

Are you one of those fantastic people who operated spark-gap transmitters in the past? Do you have any **STRANGE TALES** or anecdotes about these rigs to share in written form? I am writing a short abstract on special phenomena which occurred near, around, and in those high-power radio stations of the good old days.

We have heard some very strange tales about spark-gap transmitters and the operators who were brave enough to be near them. A friend mentioned to me that one such operator mentioned a phrase once used among transmitter personnel. "Being under the influence of the spark" was an exhilarating (almost dizzying) experience which often led to peculiar situations. The energy emanating from the inductances (often within the room) could dizzy anyone, I'm sure. I heard the rumor concerning "the influence" when sending; which suggested that certain operators were able practically to "know the other fellow's thoughts" during the communication.

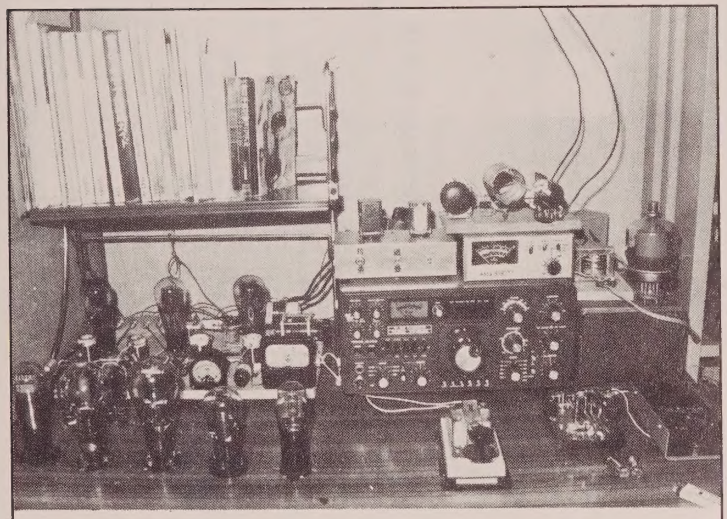
The power of static and sferics also would intrigue readers. Were you ever in a situation when it was possible, even dangerously so, to "draw sparks" from the aerial? Have you sighted "ball-lightning plasmoids" when transmitting? Those who used the powerful plasma-arcs of Poulsen often reported that a mysterious "shirring sound" could be heard near the device . . . even when shielded behind closed doors. Have you ever experienced this sort of phenomenon? Were there any suggestions of such unaccountable high-frequency sounds coming through sealed doors? Spark-induced dizziness or sleep?

I need your aid! My readers would love to hear from you. If you would like to write and tell me your account, I would receive your letter with greatest appreciation and respect. I would also like very much to speak with you or write in return concerning what you have written; I would like to publish these "strange episodes" in a forthcoming article. Please send such material to: "Sparks and Dreams," **Gerry Vassilatos**, 52 Del Mar Ave., Staten Island, NY 10312.

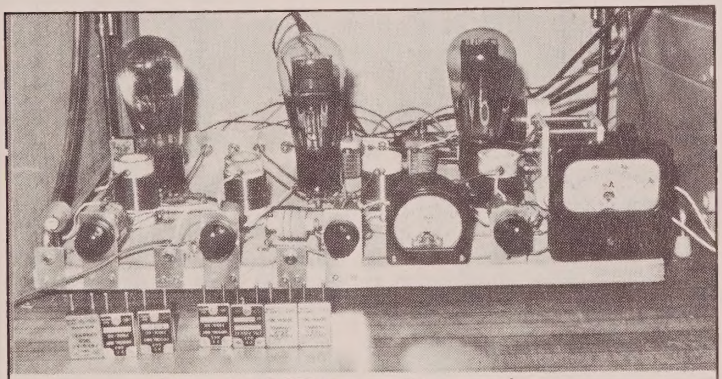
AMATEUR RADIO

EDITED BY
JOHN WARD, KE2ST
Box 7, Bloomfield, NY 14443
All correspondence requires SASE for reply.

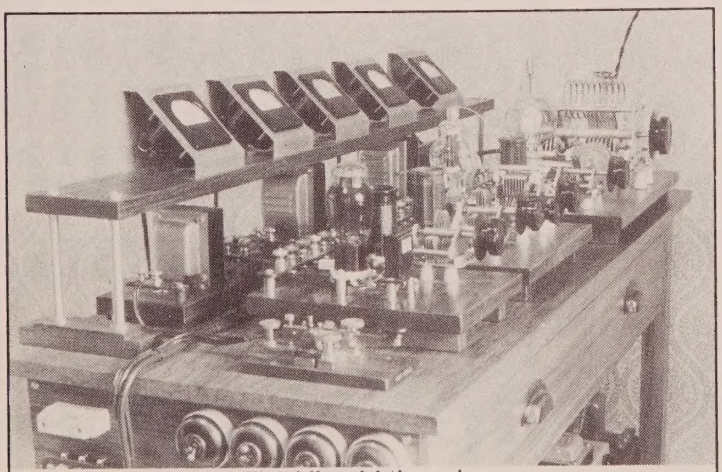
1992 OLD-TIME CONTEST RESULTS



JH8SST: complete station plus spare tubes.



The JH8SST transmitter up close.



ZL2JJ's old-time rig.

TOP TEN PLACES
(9th is a tie)

Call	Score	Call	Score
W1YG	2280	J37XC	1068
W2UK	1959	W2KFG	1056
KC0CW	1404	W2ER	1044
VE3CLX	1164	W6AD	1044
K6DIA	1098	W2VDI	1008
W2LYH	1080		

Congratulations to Parker Heinemann, W1YG, who earned first place this year with 2280 points! Second place goes to Ralph Thomas, W2UK, at 1959, and third to Sheldon Wheaton, KC0CW, with 1404. Statistics:

Logs submitted: 99
Oldest TX: W3HWT (1924)
Oldest RX: W3HWT (1926)
Lowest power: VE3BHW (3 watts).

For many years the OT CW contest has been a one-continent event. This year, I got correspondence from two new DX stations: Jun Yatsuyanagi, JH8-SST/7; and Peter Byam, ZL2JJ. Jun found noisy band conditions and was unable to make any contacts, but is hopeful that next year will be different. Peter had better luck, making three contacts. Welcome aboard! Jun and Peter both sent photos of their OT transmitters. JH8SST's attractive 47-46-210 rig is a replica of the "Junkbox Special No. 4" (*Radio*, April 1934). The name seems ironic; "1934 junkbox" parts are getting scarce in the U. S., and in Japan they are nearly impossible to find. Some items, such as tubes, must be imported, and are expensive.

ZL2JJ's transmitter is also a handsome piece; its lineup is 6L6-809-100TH, for 150 watts' input, and 120 out. The 809 doubler is keyed in its negative lead by two 2A3s. Peter's 20-meter receiver is an all-TRF design employing acorn tubes (956-954-955-955-42).

This is my last report, as I am resigning my position as contest chairman. Thank you to all of you who have helped me with your letters and kind words of encouragement. *73 de KE2ST*

1992 OT CONTEST RESULTS

EASTERN

CALL	SCORE	TRANSMITTER	RECEIVER
W1BPI	32	Mod	Mod
W1BVL	74	Mod	Mod
W1FPZ	66	34 47/46/2-210	Mod
W1KSK	116	Mod	Mod
W1NV	558	29 Hartley, 36 T55, Mod	34 3T TRF
W1SZJ	60	36 6L6/6L6, Mod	42 BC-348
KB1UV	48	Mod	Mod
NV1X	144	Mod	38 RME-69
W1YG	2280	29 PP 45s TPTG @ 8 W	38 HQ-120
W1YJ	128	34 TNT	34 & Mod
W2AAU	144	Mod	Mod
W2AN	837	37 6L6/807	39 HQ120
W2BGN	120	30 205DX/205D/211D	Mod
AA2CU	144	37 Tri-tet 42 @ 9 W	Mod
W2ER	1044	37 Gross replica	38 RCA triple-conv. super
N2EZ	156	30 210 Hartley	33 National SW-3
W2FB	272	Mod @ 9 W	Mod
W2FCH	186	Mod	Mod
N2FCZ	48	41 6L6/6N7/807 @ 9 W	41 National NC-200
W2FW	384	41/33 MOPA @ 8 W	33 National FB-7
N2GIG	90	41 Meissner	37 National HRO
K2IC	231	Mod	Mod
W2KFG	1056	36 6A6/6A6	39 NC-44 & 36 3-t super
N2KQE	11	Mod	Mod
W2LL	34	Mod	Mod
K2LMQ	231	40 6L6, Mod	38 HQ-120, 40 SX-28 et al.
K2LP	768	39 6L6/807/860, Mod	38 HQ-120, Mod
W2LQR	2	Mod	Mod
W2LV	420	Mod	37 National HRO
W2LYH	1080	36 6K7/6V6/6V6/6L6	36 HB super
WB2MVK	852	39 6V6/6L6 @ 9 W	40 4-tube TRF/regen

EASTERN

CALL	SCORE	TRANSMITTER	RECEIVER
KB2NCB	8	Mod	Mod
K2PVD	36	Mod	Mod
W2UK	1959	37 RCA ACT-40 @ 9 W	37 HRO
W2VDI	1008	32 37/42 9 W, 35 53 @ 9 W	40 SX25
W2ZUX	18	Mod	Mod
N3AYU	846	32 203 Hartley	34 National SW-3
W3BYM	417	40 6K6/6L6, Mod	39 HQ-120X
W3DB	72	Mod	Mod
W3EAN	480	41 BC-696	Mod
WB3HLH	234	41 6V6/6V6	41 Hallicrafters SX-25
W3HWT	168	24 UV-202 Hartley	26 Grebe CR-18
W3INV	216	36 2A5/210	33 Rationalized Autodyne
W3MNE	153	37 6L6	38 Hallicrafters Sky Buddy
W3OER	840	39 6V6 @ 9 W	39 HQ-120X
KD3OR	117	38 6L6	38 HRO
W3RG	44	Mod	Mod
KB3SI	36	Mod	Mod
WI3U	136	Mod	Mod
AF3V	74	Mod	Mod
W3VVS	468	39 Meissner @ 5 W	38 HQ-120X
W4CBG	132	Mod	41 SX-28
K4MOG	292	Mod @ 8 W	Mod
W4OTN	72	38 6V6/807/814	38 Hammarlund HQ-120
N4QNX	36	37 Thordarson	40 BC-348
AA4RM	549	41 Stancor 69	36 RME-69
W4VBX	651	38 6J7/6L6, Mod	36 HRO, Mod
W8CZR	78	Mod	Mod
KA8DKT	51	Mod	Mod
WD8OFB	84	33 Hartley @ 9 W	33 National FB-7
K8VBL	138	Mod	38 National NC-101X
W8VSK	588	Mod	35 HRO

EASTERN, CONT.

CALL	SCORE	TRANSMITTER	RECEIVER
W9GJS	84	30 MOPA	Mod
WB9K	687	33 Collins 150B et al.	37 National NC-101X et al.
W9POC	639	40 6F6/6L6, Mod	36 National NC100X, Mod
N9TT	134	40 BC-375, Mod	37 BC-312
VE3AFW	32	38 802/814s, Mod	39 RCA ACR-111, Mod
VE3BHW	152	39 6C5/6F6 @ 3 W	Mod
VE3CLX	1164	41 6SK7/6SK7/6N7/807	41 HRO
VE3HIE	56	Mod	Mod

Niel Wiegand, WA5VLZ, at the (old-time) controls.

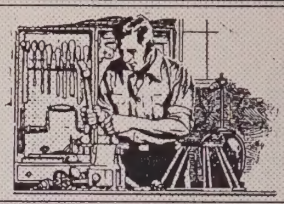
WESTERN

CALL	SCORE	TRANSMITTER	RECEIVER
K5CF	502	Mod	40 RME 70/DB 20
WA5VLZ	162	Mod	36 HRO, Mod
W6AD	1044	34 47/T55	35 HRO
K6AQB	16	Mod	Mod
K6ARE	24	Mod	Mod
K6DIA	1098	38 T21/35T	38 HRO
W6DJX	960	38 Radio Transceiver Labs	39 HRO
K6ILM	804	40 6L6	34 National FB-7
W6SKQ	40	Mod	Mod
W6TDP	369	37 Utah VAT-1 et al.	39 Hallicrafters S19R
K6TQ	486	38 6L6/807	36 HRO
W6TXR	228	40 6L6 xtal	40 6F8/6C5 regen
W6VX	96	Mod	Mod
W6ZZ	124	Mod	Mod
W8KGI/7	252	41 Meissner, Mod	40 NC-200, 41 SX-28
W7LOG	72	38 6V6/807	38 HQ-120
K7MO	329	Mod	Mod
W7OD	68	Mod	Mod
W7SEH	180	39 6V6/807	36 HRO Junior
K7SKP	18	Mod	Mod
K2WW/7	162	Mod	Mod
K7YIR	90	38 Meissner, 41 HT-9	38 HQ120X
KC0CW	1404	39 6L6/809	36 HRO
W0FXY	237	Mod	Mod
W0JF	12	27 210/203, Mod	41 HB Super, Mod
NM0L	46	Mod	Mod
W0OG	198	39 Hallicrafters HT-6	39 Hammarlund HQ-120

DX

CALL	SCORE	TRANSMITTER	RECEIVER
J37XC	1068	Mod	35 3 tube autodyne, Mod
ZL2JJ	54	36 6L6/809/100TH	38 5-t. acorn-tube TRF

EQUIPMENT RESTORATION

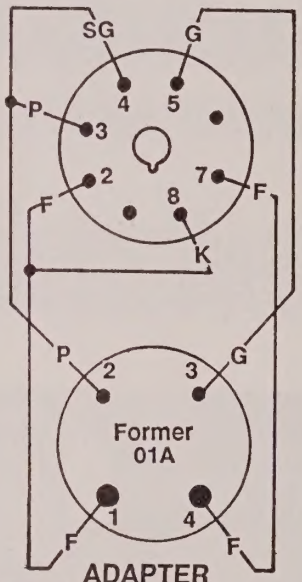


EDITED BY
LUDWELL SIBLEY, KB2EVN
44 E. Main St., Flemington, NJ 08822
All correspondence requires SASE for reply

SUBSTITUTING FOR 01As

Reader Question: I would like to use later (cheaper!) octal-type tubes in place of 01As. Someone suggested 1H5s, but these have the grid terminal on top. Any suggestions?

Answer: Yes! There are *many* possible replacements for 01As. A simple adapter, with an octal socket mounted in an 01A base, will hold the replacement. The choice of replacements depends on whether one wants to equip the radio fully with substitutes, or to mix them with 01As. In either case, the pin wiring in the drawing will take care of the electrical connections. To match the available tubes, the adapter accepts either a triode or a pentode, the latter by connecting as a triode.



ADAPTER
Pins shown in bottom view.

To use substitutes **throughout**, the easiest way is with 1.4-volt tubes. The 1A5, 1C5, 1G4, 1N6, 1Q5, 1T5, and 3Q5 should all work. All tubes in the set will then light from a single "D" flashlight cell. Since the filament current is only a fifth of its original value, the filament rheostats in the set will have little effect.

These tubes have much higher transconductance than the humble 01A. If there is a too much gain (evidenced by oscillation), the easiest fix is probably to insert a common silicon diode (1N4002, etc.) in series with the flashlight cell; the forward voltage drop in the diode will bring the filament voltage down to about a volt, giving less transconductance. Or one can reduce the "B" voltage.

To use substitutes **mixed with 01As**, we have the problem of a 6-volt filament supply. One could put a half-watt voltage-dropping resistor in the adapter, in series with Pin 7 of the octal socket (ideally 91 ohms; in practice 100 ohms). However, it is easier to use 6-volt substitutes. Triodes like the 6AC5, 6AE5, 6AE6, 6C5, 6J5, 6L5, 6P5, or 6SF5 qualify. One could also use small power tubes like the 6G6, 6K6, or even 6F6. With 6-volt substitutes, the filament rheostat is "exercised" much as with 01As and should have its normal effect - but slower-acting because the new tube heats and cools slower.

Besides "GT" shape, many of these tubes come in "G"-size versions shaped similar to the post-1932 ST-bulb 01A. With the adapter, the height will come out similar. Thus the appearance of the radio will be about how it would have looked in the Thirties after a couple of cycles of tube replacement.

Making tube adapters was a high art with radio repairmen during WW II, when substitutions were unavoidable. Constructing an adapter today is quite smooth with ring-mount sockets like the Amphenol "molded in plastic" (MIP) variety: they fit nicely into the base from a blown 01A. With ordinary wafer sockets, a bit of epoxy is needed to hold the assembly together.

OTHER RESTORATION HINTS

Oldie Batteries. People who need odd batteries should consult Radio Shack. They have scarce batteries in a computer data base. I ordered a 30-volt Eveready 413 for a Triplett 630 VOM. Took two weeks for delivery. [Rodney Schrock, KD3OR]

Dial Cord Supplies. Many old radios have an airplane dial or slide-rule dial, driven by a woven cord and tension spring. Many times the cord is broken or the spring is missing. Radio Shack has a dial-cord replacement kit, a six-foot high-strength dial cord with four assorted tension springs (Cat. 274-435) at $0.99. [John Uscinowski]

Fixing Bantal Tube Bases. Occasionally one finds an octal tube with a defective "bantal" base (the late-'30s/'40s kind with the plated metal band crimped onto a small bakelite molding that holds the pins). Some of the metal bands are made of plated brass, which can undergo stress-corrosion cracking and then spring open. Rather than discarding an otherwise good tube, pack the inside of the base with epoxy. Gently draw the cracked band closed with a worm-screw hose clamp and let the epoxy cure. The result looks original. [LAS]

RESTORING WEAK MAGNETS

D. K. Owens
478 Sycamore Dr., Circleville, OH 43113

Permanent magnets lose strength with time, owing to the demagnetizing influence of the earth's magnetic field and stray fields from wiring and appliances. Although the loss is very gradual, in 60-70 years it can be considerable. Magnetic alloys available in the 1920s weren't very good to begin with, so don't be surprised if your old headphones or horn speakers are weak and insensitive. More than half a century of exposure to stray magnetic fields has taken its toll.

A magnet can be "recharged" by exposure to a large magnetic impulse of short duration. The effect of "recharging" the magnets on the performance of an old horn speaker can be spectacular. The circuit described here uses a capacitor bank discharging through a coil to generate the magnetic impulse.

SAFETY PRECAUTIONS

The energy E, in joules, of a capacitor of C farads charged to voltage V is given by $E = \frac{1}{2}CV^2$. Because the stored energy is dependent much more on voltage than on capacity, you may be tempted to use smaller capacitors charged to higher voltages. *Don't do it!* I consider 50 V the limit for personal safety.

A capacitor bank as large as this one packs an enormous wallop. Don't discharge the bank with a screwdriver, and don't even come near it while wearing rings or a metal watch band. If you accidentally short the charged bank, you can get burned badly.

CIRCUIT DESCRIPTION

The circuit is shown in the figure. T is any small transformer delivering about 30 V at 0.5-1.0 A. Mine has two 16-V secondaries wired in series. D is a 3-A 100-PIV diode, and R is 10 ohms WW. R limits the charging current to protect the diode and transformer. PB is a small momentary NO pushbutton switch. S is a DPDT toggle switch. There is no switch in the primary circuit - just unplug when finished. I built my unit on a board for simplicity.

C consists of four 50,000-μF 50-V computer capacitors wired in parallel for a total of 0.2 farad (!). Use whatever combination of capacitors you can obtain to get the approximate capacitance; it doesn't have to be exactly 0.2 F.

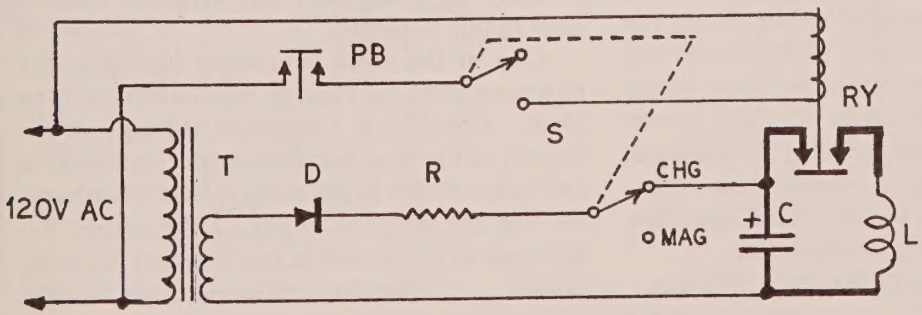
RY cannot be an ordinary relay. It must be fast-acting to handle high instantaneous current. A motor-starting contactor is ideal. Mine has two poles with a rating of 25 A, 240 V continuous each. The poles are wired in parallel. The contactor coil is 120 VAC to simplify matters. A 12- or 24-V coil would require another transformer.

L is made by winding 24 turns of 16-ga enameled magnet wire on a 5/8" wood dowel. Make three layers of eight turns each. Slip the coil off the form and tape it to hold the turns in place. This coil will be approximately ¼" thick and ½" long.

Connect the capacitors, contactor and coil with 12-ga solid house wire (heavy lines in the diagram). Be careful of polarity, and position the parts to make this wiring as short as possible. The resistance (and inductance) in this part of the circuit must be very low to get short pulses. Make all connections with bolts or crimp connectors; solder or wire nuts have too much resistance. Be sure to insulate the capacitor terminals and other connections to prevent accidental contact. Mount the coil with its axis parallel to the board and an inch or so above it. Attach the 12-ga wire as close to the coil as possible to minimize the amount of 16-ga wire in the circuit. The rest of the wiring can be ordinary hookup wire.

Mark your magnet before removing it, so you can replace it in its original position. Speaker and headphone cords have one lead marked with a tracer. This lead should always go to B+ so that, when used with sets which pass DC plate current through the reproducer, the direction of current flow will reinforce the magnetism. Reversing the current flow has a demagnetizing effect.

After removing the magnet, determine its polarity using a compass or another magnet of known polarity. By definition, the north-seeking end of a compass needle is the north pole and will be attracted to the south pole of your magnet. Mark your magnet to identify this pole. Now look at both ends of your coil. The end where the direction of winding appears to run in a clockwise spiral will be the south pole when connected to the negative side of the capacitor bank. If in doubt, magnetize a screwdriver and



(Continued on p. 45)

KEY and TELEGRAPH

EDITED BY
LOU MOREAU
W3WRE

Q: I would like to know if there are any records of early code-speed contests and where they were located.

A: Speed contests were recorded from the very beginning of the telegraph industry - to be exact, since 1855, when Samuel Morse asked for some examples of receiving and sending to be performed at the Paris Exposition of that year. At that time James Fisher, age 18, set a straight-key sending record of 55 words per minute that has never been surpassed. Remember, they were then using only a hand key, the camelback style with no spring-tension adjustment. Both he and the receiving operator were professional telegraphers.

If we check the records that have been made since the first great telegraph tournaments, we find that periodic scheduled contests were held in Atlanta, Boston, Kansas City, New York, and San Francisco. Each one included new categories, all in Morse.

Telegraph tournaments in the 19th century stressed the sending ability of the operators. Special notice is made in the records of the quality of the sending of each, with the number of errors in a five-minute period. Each operator was given a stack of old telegrams and told to start sending, rather than today's system of five-letter groups.

There had never been any discrimination over the feminine touch in the profession, and by 1890, we find a number of women operators competing.

With the introduction of the Continental code, the tournaments developed a different flavor. By September 1915, the tournament in San Francisco included a Wireless Men's Contest using a high-frequency buzzer. But this was the last official Morse tournament. From then on, as the radio-operator population increased, the contests con-

(Continued on p. 52)

KEY WIZARDS BATTLE FOR CARNEGIE TROPHY

The telegraphers' tournament, which opens tomorrow morning at Tremont Temple, will bring together the fastest and most correct operators of the country in a competition for the Carnegie cup, a beautiful silver piece donated by the steel king as a trophy attendant to the title "champion of the world." This cup will not be a specialist's affair, but will be awarded to the best all-around man, the one who receives the greatest number of points after competition in all classes.

The Carnegie cup will not be the only award. There are seven classes and a generous list of prizes has been offered. These have in no small way stimulated the interest in the tournament, especially among the telegraphers themselves, as is shown by a large list of entries for all events.

The railroad class has received considerable attention from the committee, this branch of the profession having made rapid strides during the past few years. In fact some of the fastest and most accurate operators are to be found in the employ of railroad companies. For this branch there are two classes, one sending 20 messages, and the other receiving 20 messages on a typewriter. In both classes the successful candidate will be rewarded with a $100 typewriter.

The present champion of the world, William M. Gibson, will not compete. He says: "I am getting too old for this tournament business. It is better to retire as the world's champion and let some young fellow win the laurels than get beaten."

Gibson is in more ways than one a remarkable man at the machine. In addition to the wonderful degree of speed he displayed at the world's tournament in Philadelphia two years ago when he won his title, the length of time for which he held the speed is remarkable. It was 25 years since he won his first speed contest until the time he won the championship.

Boston Entries

Among the Boston entries in the tournament are Charles F. Edney and John J. Bell. These two men have been practising and working together for considerable time and are prepared to enter the team class and keep the doubles class trophy in Boston.

One of the most interesting figures at the tournament will be George W. Conkling of New York. Conkling is recognized throughout the country as the most accurate sender especially in use codes, which is the telegraphers' shorthand. He will not compete in any of the events, but will send to the classes in the different receiving events. *The Boston Traveler, June 28, 1906*

THE QUADRUPLEX

Don De Neuf, WA1SPM, and Ludwell Sibley, KB2EVN

In the mid- and late 1800s, the quest was on for a way to derive more than one unidirectional Morse telegraph circuit from a single wire. This would avoid having to build more and more long wire lines. Systems to permit "duplex" operation over one line had come into being, but it was Thomas Edison who developed the ingenious "quadruplex" system in 1874 [W. Maver and M. M. Davis, The Quadruplex, New York: The W. J. Johnston Co., 1890]. This permitted two sending circuits to operate simultaneously in each direction over one wire with ground return. The feat of eight telegraph operators, four sending, four receiving, all working over one line at the same time was hailed as a major accomplishment. The diagram, with a simplified explanation, shows how the system functioned [D. McNicol, American Telegraph Practice, McGraw-Hill, 1913].

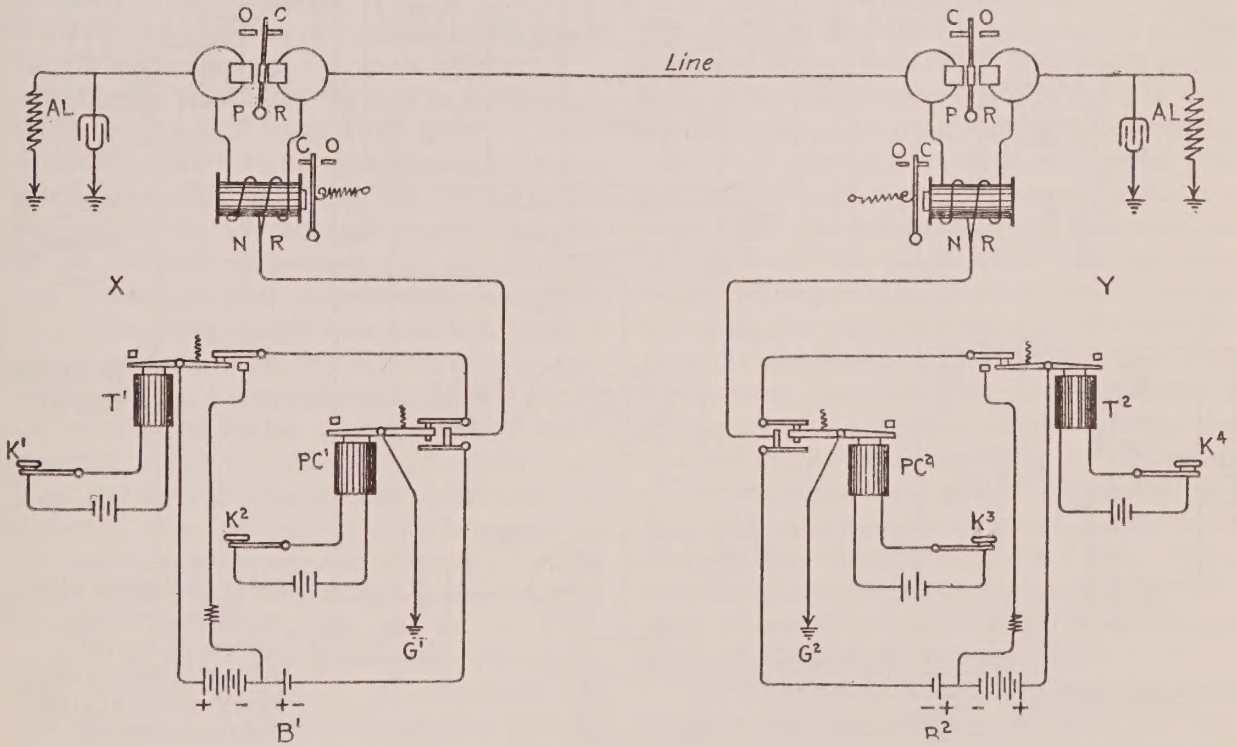
The quadruplex employed two duplex systems using artificial lines in a Wheatstone-bridge configuration. In one of the duplexes, transmission was done by increasing and decreasing current. Its neutral (non-polarized) relays NR were adjusted to respond to these changes, irrespective of the polarity of the received current. The other duplex circuit operated with polar relays PR (relays having biasing magnets on their cores). These responded to reversals in polarity, irrespective of the amount of current passing through them. The artificial lines AL permitted incoming current to operate local relays, while at the same time local keying did not operate them.

The balance of the bridge circuit was sensitive to line leakage, so readjustment was often necessary on long lines in rainy weather. In a large telegraph office, in addition to the wire chief, there was a "quad chief" responsible for operation of the quadruplex sets. The quad sets and other equipment were housed in a "wire and repeater room."

It often happened that not all four circuits derived from a quadruplex were needed between the same two offices, so it was common to extend some of them to points more distant by conventional techniques. For example, in the late 1880s the Western Union operated a duplex circuit between New York and Bradford, Pennsylvania. It used half of a New York-Elmira quadruplex, connecting at Elmira to an ordinary Elmira-Bradford duplex wire. The other half of the quad was used for New York-Elmira business.

The Bell System seems to have made little use of the quadruplex after the turn of the century, but Western Union kept it for small circuit groups relatively late. In 1929, for example, the WU facilities between Rapid City and Sioux City, South Dakota, were a single quadruplex group [OOTC *Spark-Gap Times*, Dec. 1964).

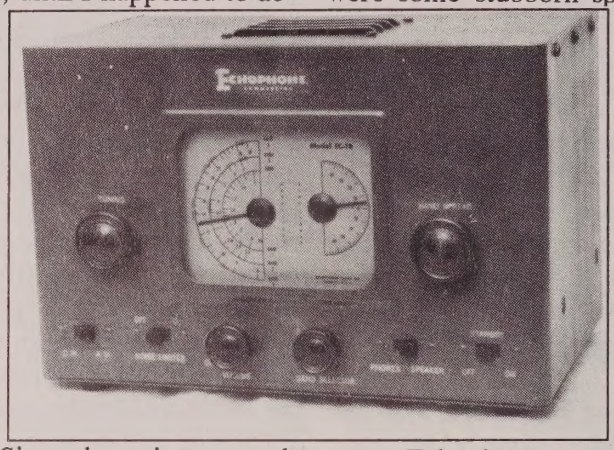
Despite the sensitivity to changes in line leakage, there were some rather long quadruplex systems, as from New York to Bangor, Maine (460 mi.) and to Lynchburg, Virginia (480 mi.). For these a line battery voltage of 280 was necessary.



"THE MANUFACTURER RESERVES THE RIGHT . . ."

Bob Haworth, W2PUA
112 Tilford Rd., Somerdale, NJ 08083

We've all seen this disclaimer on radios and radio literature throughout the years. You may remember that its principal function was to indemnify the manufacturer from retrofitting changes into previously manufactured units. I never thought much about it, figuring that it provided a natural evolution of radio designs, until I happened to acquire a radio made up of three models - an Echophone EC-1A and EC-1B, and a Hallicrafters S-41W.



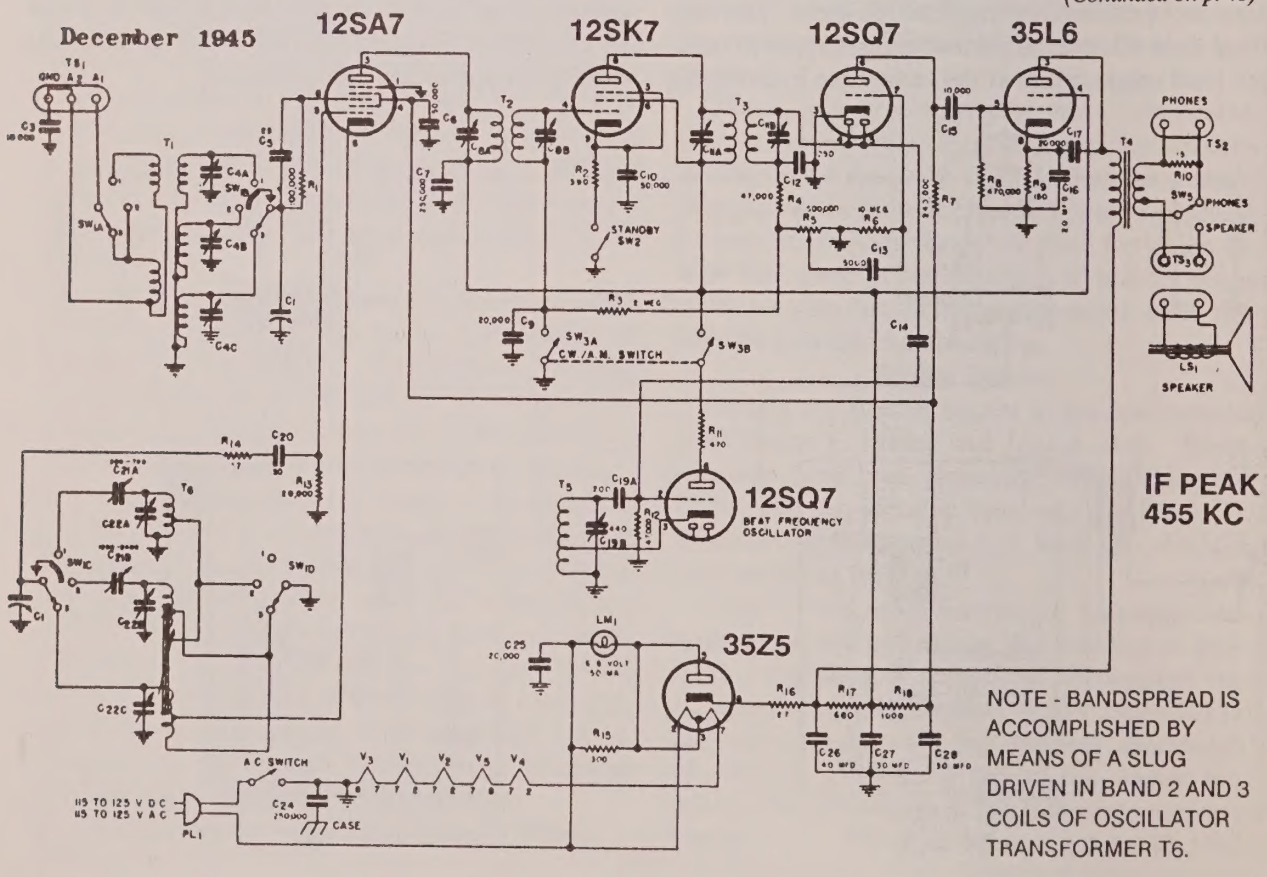
The photos show the results of restoration efforts on this hybrid radio. It was purchased from a Texas collector who correctly stated its condition as "poor to fair." The unit had been brush-painted a bilious green. Since the paint covered the silk-screened information on the controls, a ballpoint pen had been used to re-identify control functions. On a scale of one to ten it rated as much as 1 or 2 since it *did* contain all its tubes!

Restoration started with the removal of the offending paint. I had never tried this before, so some experimentation was in order. I applied a thin coat of paint remover and, instead of waiting the normal 15-minute "set up" time, I carefully scraped and steel-wooled it off after about two minutes. To my surprise, most of the green paint lifted off and, even more important, it left the original silk-screened identifications. Of course, there were some stubborn spots that left parts of the sides and top with an uneven surface. After trying to smoothen these areas, I considered it necessary to remove the paint completely and refinish. An uneven paint coat is always noticeable on any type of surface - particularly when a light is shined on it. It was then that I had my first inkling that the radio was not an Echophone EC-1B as indicated on the dial.

The removable top (with speaker) was found to have a very durable *white* enamel paint under the green-gray top coat. Only the top had this.

This discovery sent me to the literature to find out what an EC-1B actually looked like. To my surprise, Moore's Communication Receivers showed an EC-1B without noise limiter or

(Continued on p. 48)

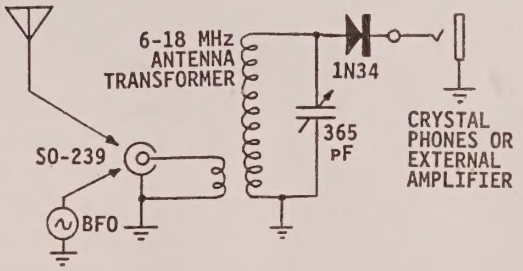


A SHORT-WAVE CRYSTAL TUNER

Henry E. Johnson, K4IPY
7201 Capitol View Drive, McLean, VA, 22101

The lowly crystal set has been relegated to the realm of toys for kids and curiosities for nostalgia buffs. Kids get a kick out of hearing a local DJ on headphones from a simple radio they can build. Old-timers remember the cat's whisker and the adjustment of dials for coupling and tuning to report hearing KDKA. Today, the eight-buck AM-FM transistor pocket jobs with headphones make everyone say "so what?" But with a different objective in mind, that simple crystal set ought to be given a try. And, I did.

The new objective was to see what could be heard on short waves rather than the BC band. Conventional wisdom suggested that not much would be gleaned from the ether this way. But with the circuit in the figure, the world was opened; a new experience was at hand. What could be simpler? An antenna transformer for the 6-18 MHz range, Miller No. C-320-A, a 365-pF capacitor connected to a National Velvet Vernier drive from some WW II stuff years ago, and a 1N34 diode; that's all that went into the basic circuit. I used a larger knob on the vernier drive to smooth out changes in frequency. I used my ancestral Brush BA-200 crystal headphones and an SO-239 for coax input. The cabinet is a Radio Shack utility box, cat. No. 270-253-A. The antenna is an inverted "L" 30 feet in the air with a 70' flattop running NW-SE. The ground is an 8' rod driven into moist earth at a point perhaps 8' from the work bench.



During the "smoke test" the number and strength of incoming signals boggled the mind . . . good heavens, it works! I tried short periods of time at sunrise, at sunset, and during the evening until I was satisfied that SW radio was possible on a crystal set, and until my patience grew slim at focussing attention on what was coming in through the cans. The strong signals were OK; but the weak ones suggested a better way of presenting the audio from this rig. I eventually unplugged the phones and went to an Archer (Radio Shack) 200-mW amplifier. Now I could listen in comfort; and didn't feel any guilt because of the added high-tech accessory. I had proven that SW AM signals can be heard on a crystal set. And, guess what? Never have I heard a local broadcast station on this crystal radio. That's remarkable!

Well, as always with us who play with radios, some "what-ifs" cropped up. One dealt with CW and SSB signals. I needed to inject some local RF into this gem if any CW or SSB was to be heard. On hand was an MFJ 40-meter VFO, which I connected to the crystal tuner by way of a coax "T" fitting. One side of the T took the VFO signal; the other took the antenna. Well, here we went again. Goosebumps! As I tuned the VFO through the 40-meter band, there were the SSB and CW signals loud and clear. The audio amplifier sounded like a regular all-band receiver with little selectivity, but, boy, could I hear some great stuff. There was a QSO underway between KC4TX and another guy whose call I couldn't read after taking notes with my shaking hand. I did record a CW QSO between WB4ESH, near Daytona, Florida, and KB4QHH, near Kitty Hawk, North Carolina. This one I verified by a landline call to Dave Levine at his home near Daytona. He was amazed, and he's an old "sparks" who keeps a crystal set around for the heck of it.

Well, next I got the urge to see what an antenna tuner would do for this rig. I connected a Ten-Tec 277 tuner between the antenna and the receiver input and . . . whoooboy! After selecting the signal I wanted to test with, the tuner was adjusted until most of the crud on either side of the desired signal was much lower. Here was selectivity at the input just as the book says it would be.

So, what has been happening here? In simple terms I have a tunable RF circuit covering a broad spectrum, namely 6-18 MHz. Most of the signals heard were in the range of 6-12 MHz. The Q of the circuit is not so great, therefore the response curve at any given dial setting is quite broad. The stronger AM signals predominate and there is a lot of QSB. Sometimes the strong ones fade out and the weak ones can be heard loud and clear. With the CW and SSB signals we have a situation something like a lake in Florida at night when the alligators are floating about with just their eyes above water. An observer on shore armed with a flashlight (that's our VFO) sweeps it across the lake, left to right (that's me tuning the VFO) until the far end of the beam meets a 'gator's eye. Result, voilá, an orange glow wherever the light beam meets an eye. The other eyes do not shine. That's how we explain what is happening when the VFO signal is tuned to one of the many CW or SSB signals in the passband of this crystal tuner.

The VFO messes up an AM signal, but does wonders with ham CW and maritime CW and

(Continued on p. 45)

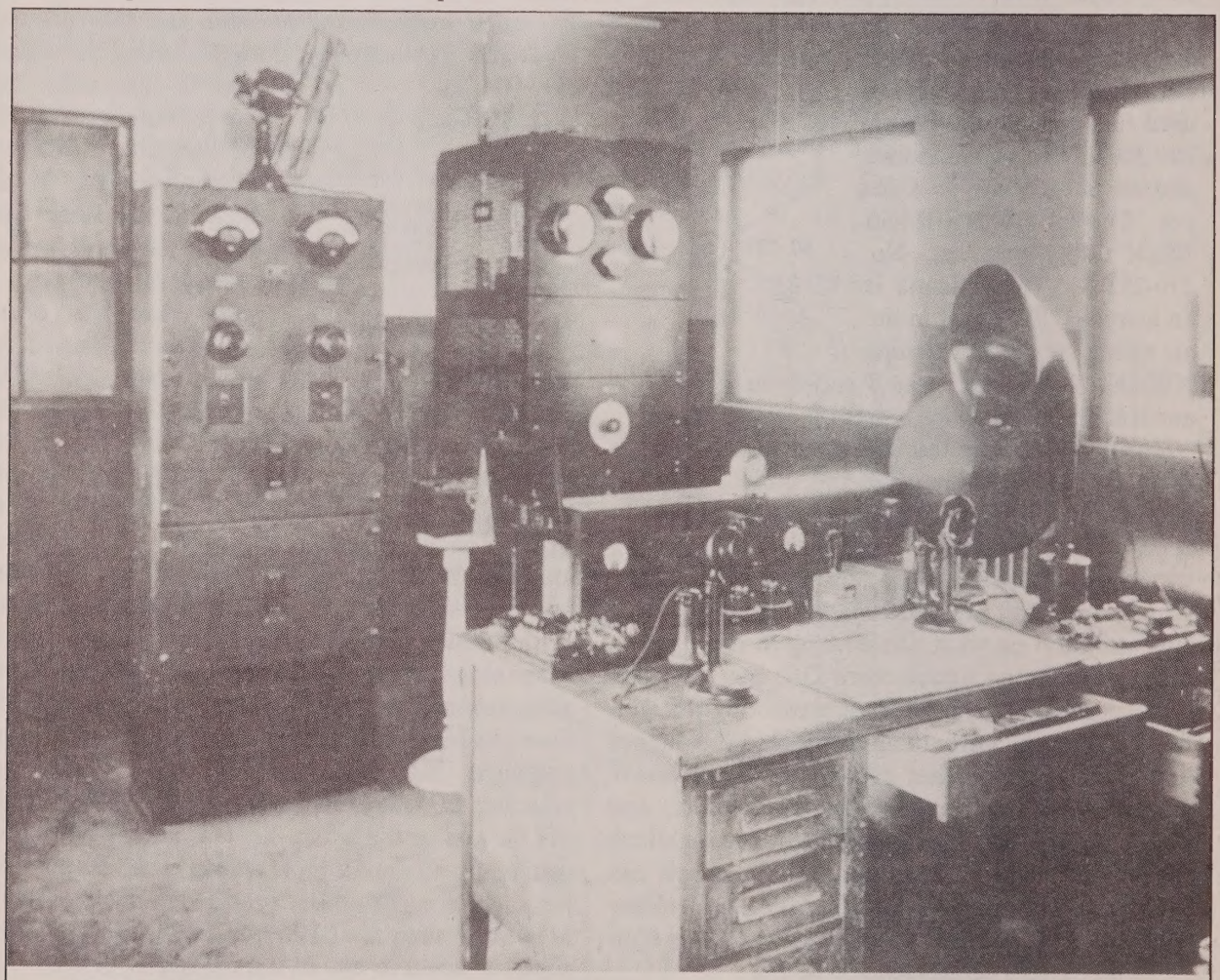
WJAR IN PROVIDENCE, RHODE ISLAND

Leonard J. Arzoomanian
61 Columbus Avenue, North Providence, RI 02911

The date was September 6, 1922. Providence, Rhode Island, was going to get its second radio station in that year. Through the efforts of one of Providence's largest department stores and a young electronic experimenter, Thomas P. Giblin, WJAR was born. It was the idea of the Samuel brothers, owners of the Outlet department store, to open a broadcast station in order to promote the sale of sets in its new radio department. At the same time, Giblin, who had been experimenting with crystal sets in his home as well as broadcasting music to the house next door, had built a 150-watt transmitter in Pawtucket, RI. Since it was the Samuel brothers who had loaned money for Giblin's experiments, it was inevitable that some sort of broadcasting marriage was to take place.

The first voice to go out over the airways was that of Ray Blanchard, who at the time headed the radio department at the store. In fact, the station itself was part of the radio sales department for the next two years. The guest speakers that night were Governor Emery J. SanSouci, Mayor Joseph Gainer, former Governor James Higgins, and the Samuel brothers. Their talks were followed by music from Providence's new Biltmore Hotel orchestra.

The station was located on the top floor of the Outlet store. It consisted of three rooms: a studio, transmitter, and electrical power room. The antenna was on the roof of the building. By October of 1922 daily broadcasting was established. Although the programming was daily, it was only for a few hours. In order to alert the listener that programming was about to begin, Mr. Blanchard used chimes from the store's furniture department. In fact, this idea was used by WEAF in New York when in 1923 they joined with WJAR to form the first commercial radio network. The chimes were again adopted in 1926 by the newly formed RCA network NBC. At the time, WJAR was NBC's first network station after WEAF in New York.



1922 view of WJAR control room, with Western Electric transmitter licensed for 200 watts on 360 meters. Desk houses the usual telegraph order wire (sounder on left of console). *(Photo reproduced by courtesy of Outlet Communications.)*

Thus it was at WJAR in Providence that the concept for the now-familiar NBC chimes originated!

Radio popularity was booming in 1923. The radio department reported a seven-fold increase in sales from its $40,000 total in 1922. That year also marked the first Rhode Island car to have a radio. As a promotional gimmick, the Outlet equipped a Model T with a radio and square-cage antenna that could pick up WJAR from ten miles away.

1924 brought further links with station WCAP in Washington. Providence listeners heard live broadcasts of both the Republican and Democratic conventions in that year. Also in in 1924, WJAR was involved in a transcontinental radio test using a link established by AT&T.

Vermont senators hear McAdoo-Smith fight at 1924 Democratic national convention, by network broadcast. Listeners are, left to right, Cole, with Peckham and Weaver over his shoulder; Sherman, Littlefield, Evers. From "Rhode Island Story."

Throughout the rest of the Twenties, WJAR's popularity grew. By the middle of 1925, most of the station's programming was being provided by WEAF in New York. In 1926, with the sale of WEAF to RCA, WJAR became part of the NBC network.

In closing, it is interesting to note that what began as a promotional idea for selling radios, in later years proved to be very profitable for the Outlet Company. By the 1980s the Outlet owned numerous radio and TV stations throughout the country.

Reference: Samuel Chipman Smart, The Outlet Story 1894-1984 (Providence: Outlet Communications, Inc., 1984)

(Continued from p. 39)

check it with the compass. You want to reinforce the original magnetization, not reverse it.

Insert your magnet into the coil with its south pole emerging from the south pole of the coil, and put a piece of scrap iron across the poles of the magnet to complete the magnetic circuit. Plug in the unit and move the toggle switch to the "charge" position. Charging takes two or three minutes. Move the toggle switch to the "magnetize" position and press the pushbutton to actuate the contactor. I repeat the process once. More than two cycles does not seem to give further improvement.

The size of the magnetic pulse can be appreciated from a few calculations. This circuit charges C to about 45 V. Using the energy equation, E = $[0.2 \times 45^2]$ or 202 joules. The quantity of charge Q = CV = 0.2 X 45 = 9 coulombs. The discharge time measured by an oscilloscope was 0.006 seconds. Since 1 ampere = 1 coulomb/second, 9 coulomb flowing in 0.006 sec is a current of 1500 amperes!

[Thinking in terms of safety, it would be a good idea to include a bleeder resistor, say, 1000 ohms 2 watts, across the capacitor bank. This device is probably useful for restoring demagnetized telephone magnetos as well as speakers/headphones. - Ed.]

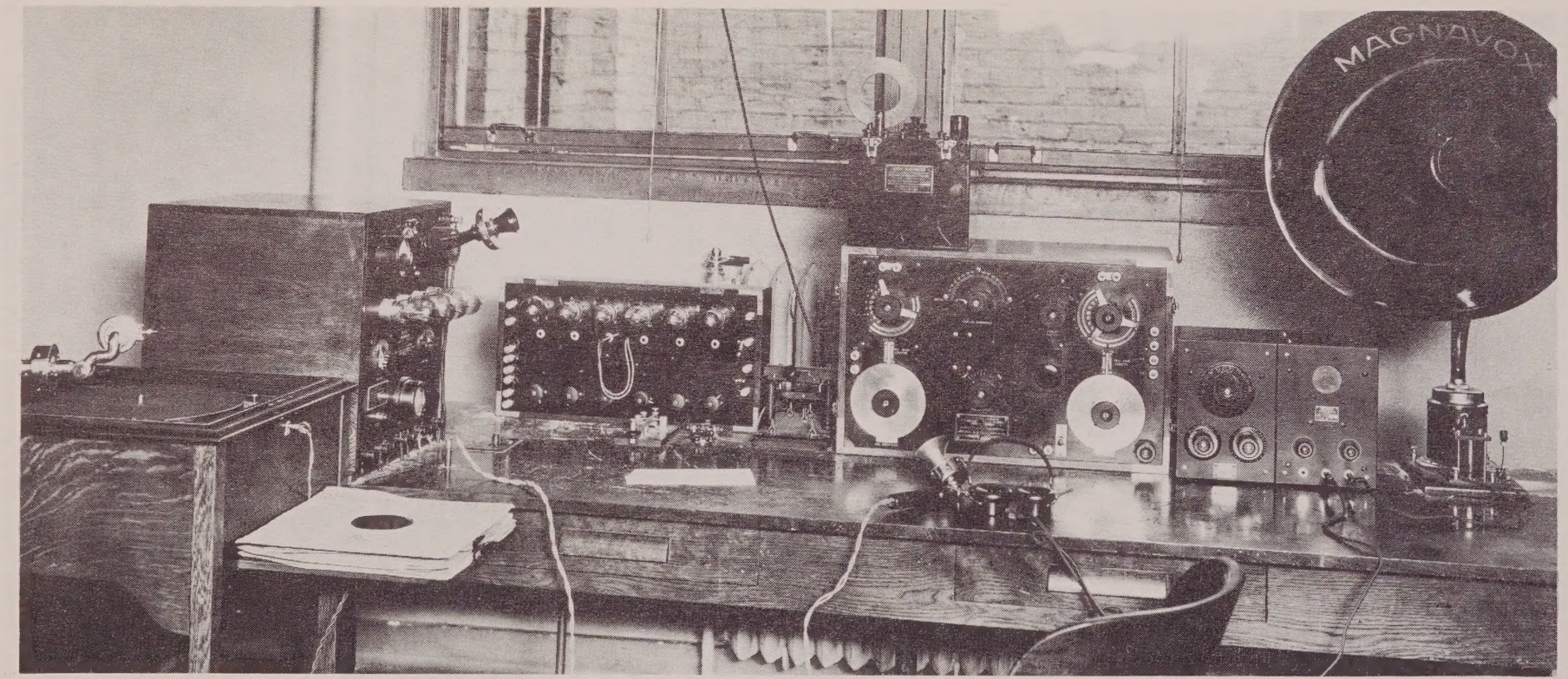
(Continued from p. 43)

SIGNALS HEARD

BBC (most likely via a relay)
Radio Havana, Cuba
Radio Moscow, at every 1/8th inch along the low end of the dial
Brussels, Belgium
Deutsche Welle
RSA, Johannesburg, South Africa
Radio Australia (in the early morning)
HCJB, Quito, Ecuador (a regular signal)
WYFR, Florida, Family Radio
CHU, Canada, time signals
Radio Canada International
Voice of America
Radio Nederland
WCC, Chatham, maritime

RTTY. The CW sounds great and wonder of it all, DX is there! Sigs from Florida, Massachusetts (WCC at Chatham with traffic lists), hams in 8, 9, and 0 land and some ships at sea. How the 40-meter sig from the VFO beats with the sigs in other bands I can't explain, but they sure do. A simple audio filter of some sort ought to improve the stuff being heard, but that's another "what-if," and we're beginning to make things complicated.

Now, I haven't re-invented the wheel. I've just learned to have fun with it. I had been brought up on the idea of limited range for a crystal set even though my old friend, Bob Howard, W4LJY, a ship's "sparks" from the very early '20s, had thrilled me with stories of hearing class B signals (that's damped waves - spark - to you newcomers) way out in the Pacific and Atlantic. That was on long wave, but still it was DX on primitive receiving sets. Now, in these modern times with so much more radiated power and a whole lot of AM, I can vouch for hearing DX on a shortwave crystal tuner. Ah, well, ain't it fun!



8MK, DETROIT, OCTOBER 1921

This photo gives a glimpse of Station 8MK, predecessor of today's 5-kW WWJ, in downtown Detroit. The equipment shown, left to right, is: **(1)** 78/80-rpm turntable with acoustic pickup, feeding a single-button carbon microphone in the tone arm for electrical output. The AWA Museum has one on display. **(2)** De Forest OT-10 transmitter, a 200-meter (1500-kHz) modulated oscillator using four "VT Audion" tubes in parallel. Rated range was 10 to 20 miles. This is the 110-volt DC model, operating from a "¼ HP" dynamotor. This same transmitter is on display at the Ford Museum, Dearborn, Michigan; while AWA has a similar unit in its Museum. **(3)** This may be some kind of audio preamp, or possibly an untuned radio-compass amplifier, with six tipped tubes. No matter: it's not wired for operation. **(4)** Send-receive antenna-transfer switch. (5) National Electrical Supply Co. CN-239 (Navy surplus?) receiver, probably for periodic monitoring of 600-meter ship traffic, as early broadcasters had to do. Atop the CN-239, a Wireless Improvement Co. (Navy) wavemeter. **(6)** The familiar Westinghouse RC receiver, probably as a station monitor. **(7)** Magnavox LS-2 loudspeaker, of the electromagnet-field type, fed from the RC. **(8)** In front of the preamp panel: hand keys - one "wireless" size; one "landline" type. **(9)** In front of N. E. S. Co. receiver: single-button hand microphone (probably Magnavox) and Baldwin headphones. **(10)** On the floor: a 6-V storage battery for tube filaments and speaker field coil.

The station had gone on the air August 20, 1920. As of early 1921, it was licensed to the Radio News and Music Company (M. D. Lyons), Lafayette and Second Avenues, Detroit. This photo was probably taken about the time that the Detroit News received callsign WBL (soon afterward WWJ) and raised power to 2000 watts on 360 meters (832.8 kHz) from a different location.

Photo: The Detroit News, courtesy of Bruce Kelley.

MODEL TEST CAR IN FCC MUSEUM

From material supplied by Rebecca R. Willman of the FCC

The Federal Communications Commission is in the process of building up a museum at its former Central Monitoring Facility at Grand Island, Nebraska. The available material includes "several hundred" radio transmitters and receivers, photos, equipment manuals, and books. The building itself is on the registry of national historic buildings.

One of the prime display items in the facility is a model, 51 inches long, of a Packard field car. Here is the story of that model and its prototypes.

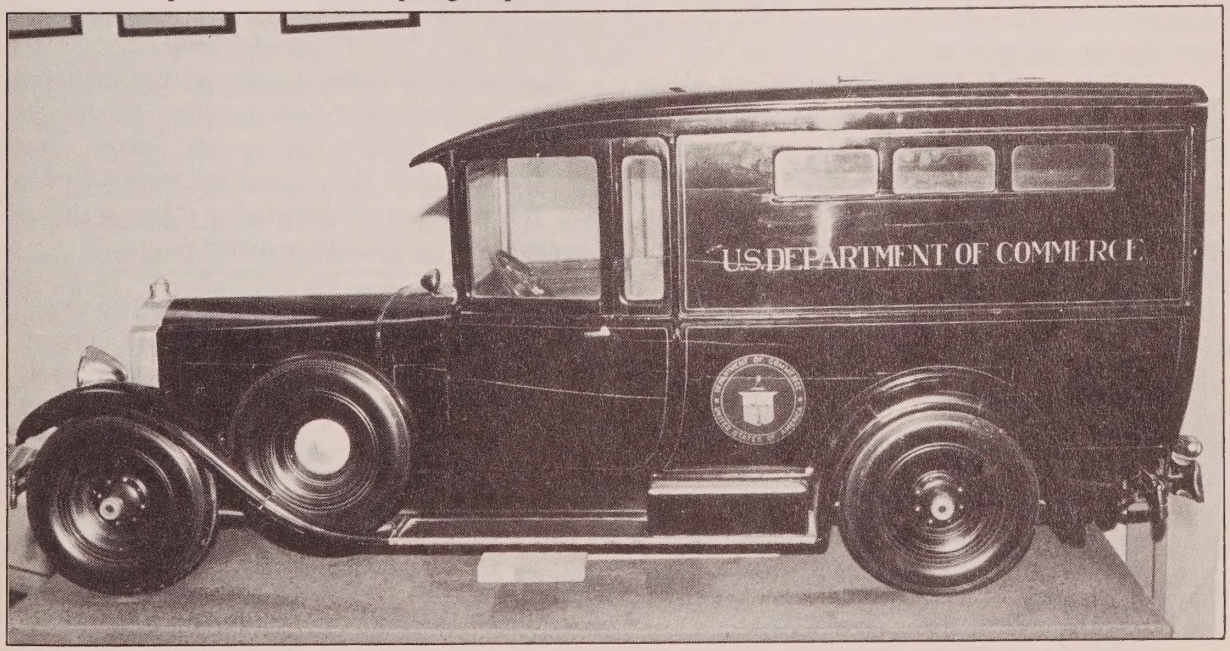
HISTORY OF THE FCC TEST CARS

In 1910, when the United States enacted radio laws and regulations, it became necessary to organize a radio inspection service for the enforcement of these and subsequent radio legislation. Early laws required the licensing of radio stations on ship and shore, the examination and licensing of applicants for radio operator licenses, and the inspection of radio transmitting stations.

With the advent of radio broadcasting, the functions of the radio service were increased. Due to the sensitivity of the instruments needed for measurement and the increasing variety that were needed, it was no longer possible for a radio inspector to carry all the equipment. To solve this problem, attention was turned to designing an automobile capable of housing all of the equipment the inspector needed to perform the duties prescribed by radio law.

The first car made to fit these requirements was placed into service in October of 1925. Eventually ten of these radio test cars were ordered from the Packard Motor Car Company. A heavy-duty chassis with special wheels and spring suspension was needed to support an oversized gas tank and the new equipment. The bodies were supplied separately per specifications prepared by the Radio Division. Each body was constructed entirely of a composite nonmetallic compound that used metal only in places where it would not affect the operation of the equipment.

The internal arrangement of the car was as follows: on the desk across the front end of the radio compartment was the combined monitoring and field-strength measuring equipment; on the right side of the desk was a radio-frequency oscillator, which covered a range of 10 meters to 20,000 meters [15 kHz-30 MHz]; on the left side of the desk was a crystal oscillator. The storage batteries furnishing power for the equipment were installed below the car's floor. Other equipment included in the vehicle was a variety of wavemeters, omnigraphs, a field intensity set supplied by Western Electric, a complete radio direction finder with loop antennas, and a five-watt transmitter to use for emergency communication work. A typewriter was carried, making the car in reality a traveling office. The interior of the compartment where all measurements were made and examinations were held was provided with two dome lights, so that the measurements could be made at night. The car usually carried two men, one driving and the other riding in the back making radio observations and measurements. Between assignments one man could drive and the other sleep, thus permitting long hours on special tasks. (Information from The Radio Manual, by George Sterling, 1929).



HISTORY OF THE MODEL CAR

"All that remains of that early fleet of shiny black Packards, the first and foremost of the many multi-purpose vehicles which were destined to follow, is a model car at the [FCC] office in Grand Island, Nebraska."

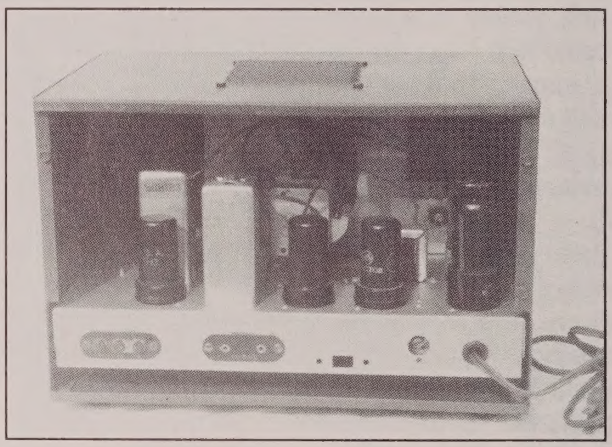
"Those old Black Marias, of which we were so proud and by means of which our pioneers established those sound basics on which many of today's procedures and practices are set, have long since passed to their reward. If the truth were known, it was the original Chicago Packard Test Car which was used in making the official field strength measurements, the results of which were instrumental in the selection of the present location for the Division's big new Central Primary Monitoring Station (the present day Grand Island Monitoring Station). This was done in the days when the Radio Division was part of the Bureau of Navigation of the Department of Commerce." (Excerpts from a letter from George S. Turner, K4AP, Chief of Field Engineering, to John McKinney, Engineer in Charge at Grand Island, February 1970.)

At the Sesquicentennial Exposition honoring the signing of the Declaration of Independence, which was held at Philadelphia in July of 1926, displays on the growth and greatness of our country were to be emphasized. Looking to the government as a principal participant, the Sesquicentennial Committee requested that appropriate exhibits be prepared. Among these was a request for a communications exhibit relating to the licensing of radio stations and operators, and the regulation of existing radio services, principally broadcasting, marine and amateur. Herbert Hoover, then Secretary of Commerce, approved the idea and directed the chief of his Radio Division, W. D. Terrell, to carry out the assignment. It was decided that the exhibit should consist of a complete shipboard spark installation; a 500-watt composite broadcasting station; miscellaneous measuring equipment used by the radio inspectors; an examination table equipped for the giving of actual radio-station operator licenses; and, last but not least, a replica of the latest model of the Packard Radio Test Car.

The task of building this model was quite an undertaking in both time and money. In fact, this finished model cost more than one of the original Packards. Every single part, inside and out, was hand-made by an expert modelmaker.

(Continued from p. 42)

speaker-phones switches on the front panel, while my EC-1B has these features. Further, the Rider's schematic for the -1B show a speaker switch (no ANL) on the rear. My chassis has a punch-out for a slide switch on the rear apron - hence I assume that's where the switch was to be located. Moore's pictures further show that my EC-1B is actually housed in an EC-1A wrap-around. Further, the white top is apparently from a Hallicrafters S-41*W* (white) unit.



Thus it appears that the chassis is actually a "B" version (since it has bandspread via a tuning slug inserted into the oscillator coil, and a speaker-phone switch punch-out), mounted in an EC-1A wrap-around panel - with a top from a completely different model.

It must have created some tense moments for the people on the Hallicrafters assembly line when this radio went down the line, since switches and wiring were not where they were supposed to be!

Now that the radio is restored and operating beautifully, I have had time to reflect on the phrase "The manufacturer reserves the right . . ." and have wondered if this piecemeal substitution of parts falls in that category (or is it just a relic of the times [1945]?) - as time marches on.

Most of us who restore broadcast radios have seen the effects of manufacturers scrambling to get products onto the market in time for the 1945 Christmas season. This often manifests itself in crazy mixes of octal and loktal tubes in these sets, mixes that varied from one production run to another. Here we see Hallicrafters, with its wartime orders for BC-610 transmitters, BC-787 receivers, BC-669 transceivers, etc., cancelled, moving to get civilian receivers out the door with prewar parts stocks.

A hobby where small variations in the product truly matter to the *afficionadi* is toy-train collecting. Lionel collectors considering, say, a No. 114 boxcar from 1912-26 are quite interested in details: the car may be in one of three colors, with one of three serial numbers, two types of wheel trucks, two types of couplers, with one or two brakewheels of two sizes, etc. Here, too, the maker routinely used up old stocks of parts and made design changes on the fly. - LAS

NEW MEMBERS

Joyce Peckham

AWA welcomes the following new members. We list all new members routinely - if your name does not appear within six months after joining, please advise the Editor. If you do not wish to be shown, just mark the application form accordingly. AWA does not provide an address list or other directory of its membership.

John **Alutto**, NY, worked in a radio shop from age 13 (1939-43); Jeffrey **Angelo**, NJ; Alan **Askinas**, PA; John **Babina**, Sr., CT, GE, Templetone, MP Engineering; John H. **Bailey**, W4LCA, TN, AM broadcast owner-engr.; Charles N. **Bates**, CA; David W. **Beach**, ME, WW II Navy radio tech.; Harold **Beene**, TX; Louis A. **Bellock**, NY; Edward **Berberich**, NJ, WDOM-FM; John F. **Bigony**, TX; J. Paul **Brennan**, NY; Charles F. **Brett**, CA; Ron **Brokloff**, K3AME, PA, WCUM, WTBO; Thelbert B. **Brown**, VT, teacher - radio-electronics; Heather **Bruce**, IN; Page P. **Burgess**, VA, Cain Electronics; David **Burnell**, GA; Thomas F. **Burns**, CT; Robert W. **Butt**, N1KPR, CT; Michael **Camillo**, NY; Marion S. **Campbell**, W5VFG, TX; Teddy W. **Carlile**, NC; Jerome L. **Caron**, CA; Robert C. **Carter**, AL, GE Tubes; Horace **Caudrey**, ON; Carlos E. **Chapel**, PR; Adam **Chowaniec**, ON, Newbridge Microsystems; John T. **Clement**, TN, USN-USAF; James T. **Clinton**, NV1M, CT, UAL radio mech., pilot; Syl J. **Cocuzza**, OH; Joe **Coffin**, N2PQC, NY; Gordon E. **Coffman**, ex-WA2NFO, FL, USN elec. tech., IBM computer tech.; Henry B. **Cohen**, NJ, "Mr. Transistor"; John J. **Conti**, NJ; Markus L. **Coonce**, IN; Robert C. **Corbin**, K21SU, NY; B. Lee **Cornwell**, KD3KD, PA; Thurman L. **Coss**, CA; Jonathan A. **Cowne**, VA; Delmar E. **Crawford**, MI; Frank L. **Cuneo**, NJ; Gary **D'Amico**, WB2ZAK, NJ; Joseph E. **Darling**, KA1ZLJ, RI, radio-TV repair; George J. **Dohm**, W3QZZ, PA, radio service; R. W. **Dorci**, OH; James F. **Dotson**, KHM3241, TN, Dotson's Radio Service, 1948 NRI graduate; John R. **Dudley**, VA; Eugene **Elliott**, VA; Roger J. **Faulstick**, FL; John W. **Feller**, IA; Skip **Fiedler**, MO; Melvin L. **Ford**, Jr., VA; Glenn W. **Fowler**, CA; Allan J. **Franowsky**, WX9L, IL; Peter **Frei**, MA; John R. **French**, NJ; Norm **Gertz**, K1AA, FL, USMC high-speed opr. 1941-42; Carl **Glover**, England; Frank W. **Goff**, WA; Harold R. **Goodrow**, TX; Henry F. **Graff**, NY; Axel R. **Granholm**, KN4PY, VA; David P. **Hagan**, NY; Paul W. **Hambleton**, WI; T. W. Casey **Haneg**, TX; David **Hanes**, CO; Dick **Hardin**, FL, TV repair; John L. **Hayes**, NH; William B. **Hayes**, NC; Bill **Hennessy**, N5NOB, TX; Joseph A. **Hock**, NY, NY Tel. Co.; Ken **Hoffman**, CT; M.A. **Holcombe**, NC; Chuck **Holmes**, CA; Thomas L. **Hoskins**, OR; Bill **Howard**, GA, publisher of *Wireless Trader*; Jack E. **Hubbard**, OH; Steven M. **Hubschmitt**, DE; Donald **Hudson**, KA1TER, CT, Hellicrafters; Tom **Hulsey**, SC; Jim **Hutchins**, ME; Jerry **James**, TX; Len **Janicki**, FL, own TV repair shop; Albert L. **Janney**, PA; Chuck M. **Jasensky**, VA; R. A. **Jennings**, NY; Dennis M. **Kane**, FL; Robert R. **King**, NJ; Arnold **Kogen**, CA; John **Kosh**, CA; Jerry **Kostel**, SD, radio-TV repair; John L. **Koushouris**, CT, CBS TV, Hughes TV Net; Gerald H. **Kriss**, PA, ex-ham, GE, Ampex, Presto Rec.; Marc **Kulbacki**, VE3GIX, ON; Jeffrey C. **Kyle**, CA; Richard S. **Lambert**, NY; Hanspeter **Lambrich**, Switzerland; Annette **Landis**, NJ; Curt **Larson**, MN; Nathan **Lawres**, FL, USAF, Philco, Fada; Jay **Leiber**, W5VUE, TX; Edward **Leonard**, MA; Robert W. **Loughlin**, NJ, Boonton Radio, H-P; Larry **Lovell**, N2KKO, NY, WSYE; Robert A. **Lund**, KA0DIG, MN; C. A. Theodore **Lundberg**, NY; Carl **Maguire**, MA; Mike D. **Martin**, KY; Manuel G. **Martinez**, CA; Shannon **Mayfield**, OH; Sumner **McDaniel**, NJ; Larry **McDonald**, CA; Dale **McLellan**, CA; Don **Meadows**, N6DM, CA; Kermit R. **Mercer**, K2BRN, NY, General Dynamics; Edgar P. **Michael**, TX; Bernard B. **Miller**, NY; Richard **Modafferi**, K2ICO, NY, McIntosh Lab. 1968-72, self-employed inventor; Walter S. **Model**, K9UKZ, IL; Richard **Mollentine**, WA0KKC, KS; Michael P. **Molnar**, NJ; Joseph J. **Montanaro**, CA; Douglas **Montgomery**, NY; Frank T. **Montgomery**, WA4PEP, NC; Arthur M. **Moon**, TN, Norfolk Southern, Collins; Jeffrey A. Morris, VA; C. J. **Murphy**, OH, USN sound-movie & gyro tech 1943-46; 2-way radio; William **Myers**, OH; Stanley **Nagler**, NY; Thomas J. **O'Connor**, NI8G, OH; Robert A. **Olsen**, KE6OY, CA; E. T. **Ostermeyer**, TN, Signal Corps, WW II; Edward **Parise**, MO; Ralph **Parker**, TX; George R. **Passmore**, GA; James A. **Pauling**, PA; Michael D. **Potter**, TX; Charles R. **Pulton**, II, FL; David C. **Purcell**, Sr., ME; Robert M. **Pszczola**, NJ; Mark S. **Rauber**, NV; Ernest W. **Reeves**, NY; John L. **Rehak**, N6HI, AZ; Robert A. **Reynolds**, AZ; Gregory **Richardson**, WA8JPC, WV; Kevin D. **Ried**, NJ; Leigh **Robartes**, Jr., W2EHA, NY; Richard P. **Robinson**, CT, produces radio & TV ads; Kenneth J. **Rodkey** Jr., PA; Leora S. **Rolf**, OH; Walter **Rosenfeld**, MA, radio repair, student broadcasting; Ford U. **Ross**, FL, USN, flight radio op. and tech.; Frank **Scaglione**, K2RLG, PA; Charles **Scarborough**, VA; Anthony **Scarfogliero**, NY; Charles **Schiefer**, SWL, PA; Fred H. **Schmidt**, K4VA, GA; Andrew B. **Schweitzer**, Jr., TX; Robert F. **Siebert**, KA3P, PA; Frank R. **Skalbania**, CA, TRW; Rudolph **Skaritka**, W9KYA, AZ, GE Medical Systems; Craig **Smith**, NY; Curt **Smith**, CT; George A. **Smith**, NJ; George J. **Smith**, NY, hobby since 1940; John David **Smith**, VA, age 10, has own collection; Raymond C. **Smith**, CA, San Francisco Radio, KPH; Irwin **Sobelman**, NJ; Frederick **Stark**, N2FUT, NY; Glenn Lee **Stiwalt**, NC; Charles J. **Storni**, CA, Pacific Gas & Electric; James H. **Sweeney**, NY; *(continued on p. xx)*

THE RADIO BOYS VISIT NOVA SCOTIA

Walter H. Bollinger, AF3V
169 Mayfair Dr., Pittsburgh, PA 15228
Adapted by permission from *The Pittsburgh Oscillator*, Vol. 6 No. 2 (June 1991)

It is unlikely that this tale of adventure will compare with the excitement found in any of the Radio Boys books that brought so much pleasure to the teenagers of the Twenties. However, there is still a wondrous story about the pioneer work of Mr. Marconi and his associates. It is a story that evokes appreciation for the efforts and courage of those individuals whose work in the early 1900s stimulated the rapid growth of wireless.

This trip, made by Cal (W4OTS) and the author, had several objectives. We were interested in seeing the Canadian provinces of New Brunswick and Nova Scotia and visiting the site of the early Marconi transatlantic station at Glace Bay. The trip took place in mid-September, 1986, covered 3200 miles, and took 12 days (from Harrisburg, PA, and return). We visited most of the historic and scenic spots mentioned in the guide books - the tidal bore at Truro, the Alexander Graham Bell Museum at Baddeck, the scenic Cabot Trail skirting the far end of Cape Breton Island, the fortress at Louisbourg, and the City of Halifax. Our tour concluded with a swing around the southern end of Nova Scotia through Yarmouth and on up to Digby, where we crossed the Bay of Fundy via ferry to St. John, NB.

Glace Bay, the site of the Marconi station, is some 20 miles northeast of Sydney. The location was marked by a stone monument with a plaque describing the site. There was also a sign indicating that a museum would be built *[now done - see Aug 1990 OTB, p. 55]*. Nothing remained of the station except for some pieces of the concrete foundations. It was on the edge of the sea and the ground was marshy. While visiting the site many questions crossed my mind. What was the station like? What was the source of primary power? What kind of antenna was used? What kind of receiver? The more I thought of these questions, the more intrigued I became. There just had to be a wonderful story here!

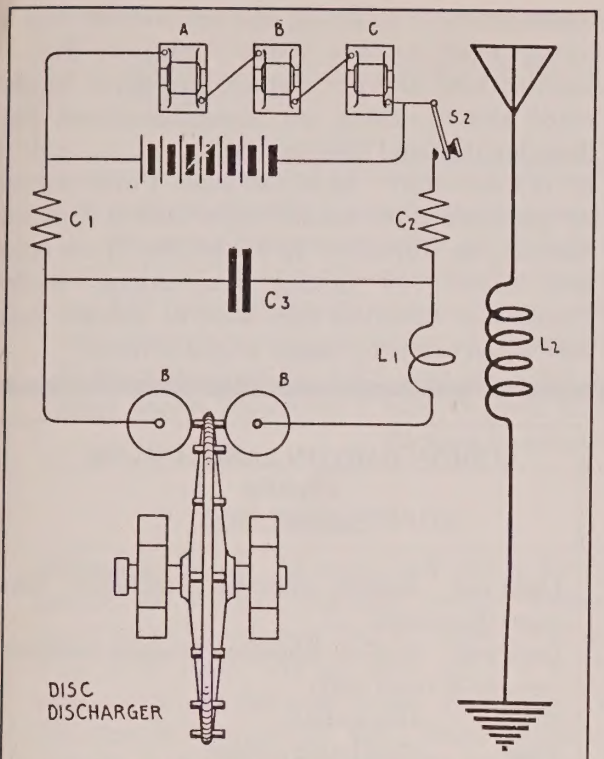
Returning home, I began a search for answers to the questions raised at Glace Bay. Fortunately, one book provided a good start - Practical Wireless Telegraphy by Elmer Bucher (New York: Wireless Press, 1917 or 1921 eds.). And, loan of another book - the Elementary Manual of Radiotelegraphy and Radiotelephony for Students by J. A. Fleming (3rd ed., London: Longmans, Green, 1916) - added further information..

The story really begins in England in 1900, where Marconi began work on a transmitter at Poldhu in Cornwall. There, a 25-HP oil engine drove a 50-Hz, 200-volt alternator to provide power to a damped-wave spark transmitter. The antenna was a multiple-wire affair, cone-shaped, with a supporting ring of 200-foot masts. Then, quoting from the Fleming book:

> After much experimenting over shorter distances, Mr. Marconi went, in December, 1901, to Newfoundland, taking with him balloons and kites as means for raising a wire to form a temporary receiving antenna and various forms of oscillation detectors; and on December 14, 1901, he was able to announce that he had received signals which undoubtedly were the preconcerted signals at that time being sent out from the Poldhu station. It was thus demonstrated that the electromagnetic waves made by no extravagant power expenditure in Cornwall could be detected at a distance of nearly 2000 miles, in spite of the considerable curvature of the sea surface in that distance.

Erection of the station at Glace Bay began in 1902 and a corresponding station was erected at Clifden, Ireland. The transmitters in these stations are described in the Bucher book as follows:

> Contrary to previous installations, the condensers were charged by 14,000 volts direct current, the source of which was a battery of 6,000 storage cells connected in series. These batteries in turn are charged by three 5,000 volt generators (A, B, C, Fig. 302) of very special construction, connected in series and then to the terminals of the battery. As will be seen from the fundamental diagram, Fig. 302, the energy stored up in the condenser C-3 is discharged through the usual oscillation transformer and Marconi's studded disc discharger. This discharger consists of a large steel disc several feet in diameter, with sparking electrodes mounted thereon and which pass closely to the fixed electrodes B, B. The electrodes B, B in reality revolve slowly, and therefore present constantly cooled surfaces to the path of the spark discharge. Protective chokes C-1 and C-2 protect the generator from the discharge of the condenser.
>
> The principal advantage of the disc discharger is the quenching effect obtained when the disc is driven at a certain velocity. This prevents the re-transference of the energy to the spark gap circuit, and in consequence, the antenna oscillations have a decrement as low as .03 per complete cycle. In addition, a spark or group note of distinct musical pitch is obtained which has been found extremely desirable for aural reception through atmospheric electricity.
>
> The high potential condensers at both of



Fundamental circuit of the Glace Bay type of transmitter (from Bucher, Fig. 302)

these stations are of unusual construction and dimensions. Consisting of a number of large steel plates suspended from the ceiling on special insulators, they are separated sufficiently to prevent the spark discharging between plates, and the required capacity is found in connecting a large number of such plates in parallel.

Beyond the size of the condenser, the oscillation transformer comes in for attention, principally because of its dimensions. The primary winding has but two turns, consisting of a specially constructed cable, one foot in diameter. Owing to the large amounts of power in use, a cable of these dimensions is positively required and good surface conductivity is among the chief considerations.

Signalling is not effected by the interruption of the primary circuit as in small-sized Marconi transmitters. In these sets, specially constructed high voltage relay switches (S-2), in turn controlled by a small telegraph key and source of D.C. current, interrupt the high voltage circuit from the battery to the condenser. Arcing is prevented by forcing an extra heavy air blast on the contact points by specially designed motor blowers.

The receiving apparatus at these stations may either consist of a Marconi balanced crystal receiver, employing the carborundum rectifier, or a set of Fleming vacuum tubes of special design, type and construction. Through a set of microphonic relays, connected in cascade, the signals may be amplified considerably and either deciphered in an ordinary ear telephone or the pulsations of current may be indented on the wax records of a dictaphone.

The original antennas at these stations were apparently duplicates of the four-tower design used at Poldhu. However these were subsequently replaced with inverted L types, as Marconi found that the inverted L exhibited favorable directional characteristics. I have found no details on these antennas but it is likely that the horizontal portion was some 200 feet above ground and at least 1000 feet long. Some idea as to the size of antenna used generally (there were ultimately some ten to twenty Marconi stations erected soon after those at Glace Bay and Clifden) can be had from what was said of the one at New Brunswick, NJ. It "has 32 wires connected parallel, 5000 feet in length. The aerial is supported by twelve tubular steel masts, 400 feet in height, arranged in two rows of six each. The fundamental wave length is approximately 8000 meters" (from Bucher book). Some antenna!

The tubular steel masts were in themselves a marvel of engineering. Each was made up of flanged steel cylinders, stacked one atop the other and bolted together. In addition to the antenna stretched between the masts, great quantities of wire were placed in the ground to provide an efficient earthing system. These wires were in turn connected to zinc plates placed in trenches.

The receiving station for the Glace Bay transmitter was located at Louisbourg, approximately 30 miles south. For Clifden, the receiver was at Letterfrack, some 12 miles north. This separation of transmitter and receiver was to facilitate break-in and duplex operation. Glace Bay transmitted on 8000 meters (37 kHz) and Clifden on 5,500 meters (55 kHz). Also, each receiving station had an auxiliary antenna oriented so as to receive maximum signal from the local transmitter. This signal was then inductively coupled so as to cancel whatever interfering signal came through from the primary receiving antenna. Marconi called this the "balancing out antenna."

From the above some idea can be had as to the magnitude of the endeavor to initiate transatlantic wireless communication. Considering that almost all of this equipment had to be designed "from scratch," financed, ordered, built, tested, transported to the remote site and finally erected, the immensity of the task becomes apparent. Also, there were matters such as site selection and preparation, securing of workmen, arranging for their housing, food, etc. The task seems endless and yet it was accomplished, all in the early years of this century!

It is not the author's intention to suggest that Marconi and his men were responsible for all developments in the early days of radio. Certainly, credit must go to them for the early transatlantic systems. Other pioneers in the field faced and solved problems of corresponding magnitude and

(Continued on p. 52)

(Continued from p. 27)

Dayton!) In addition, there are now over 50 collector clubs which sponsor radio "meets" and print club papers with sales listings. And lastly, there are such commercial dealers as Antique Electronic Supply, 6221 S. Maple Ave., Tempe, AZ 85283 (602-820-5411; fax 602-820-4643), whose catalogs list everything from tubes to grille cloth. See p. 56 of the February *OTB* for more sources.

RADIO BOOKS - In the past few years, there have been numerous books published, covering all phases or radio collecting and restoration. For a listing, write Antique Radio Classified, Box 2, Carlisle, MA 01741 or Antique Electronic Supply noted above. There are numerous others, but these are the two I have dealt with.

RC of A BANQUET - As in past years, I have reserved two tables at the annual Radio Club of America banquet, on November 20 at the New York Athletic Club. In making reservations, Radio Club/AWA attenders may wish to indicate that they would like to be seated at one of them.

(Continued from p. 26)

tor Howard Schrader is reported to have once organized a display of forty Audions, none of them constructed identically. Actual proof that audions with both filaments connected were intended for use as amplifiers seems to be lacking. Lauren suspects that the extra filament lead was always present on the earlier audions. The later samples (stamped-out plates with their support wires crimped rather than welded) never seem to have the extra lead. In these versions, this may be related more to production cost than to intended use.

Lauren notes that, besides lifetime, another problem with tantalum filaments was a tendency to warp during heating, shorting to the grid. - LAS]

AUDION CARTON LABEL COLOR CODES
Sept. 25, 1914

Light red: Audion amplifier, tantalum filament (first step)
Dark red: Audion amplifier, Hudson filament (second & third step)
Green: Ultraudion
Blue: Oscillating audion

Information from George Clark's "Radioana," courtesy Jerry Vanicek

---

(Continued from p. 40)

tinued for the non-landline fraternity. The sending element was eliminated; these contests were receiving-only. The contests were, and still are, made from prepared tapes rather than the stack of old telegrams, press copy, railroad, sports, etc. Theodore McElroy, modestly self-styled as the "World's Champion Radio Telegrapher" in a Mac Key ad (1936 ARRL Handbook), claimed to have gathered trophies for doing 51 WPM at Boston in 1920, 55 WPM at New York in 1921, 56-½ WPM at Chicago in 1922, and 69 WPM at Brockton (Boston) in 1935. (*Where are all those historic trophies today?!*)

Results of all the contests from 1855 on were compiled by Donald McNichol, in an article in *The Railroad Man's* magazine, August 1917. For a more recent reference, the records were compiled by Frederick McClintic, in *Telegraph and Telephone Age*, December 1934. For amateur radio operators, the "Navy Day Receiving Competition" announced in *QST* for October 1939 (p. 20) exemplified a competition for receiving accuracy in which operators could participate by mail in *QST*; likewise the "ARRL Copying Bee" announced on p. 34 of the December 1939 issue.

(Continued from p. 51)

we are similarly indebted to them.

The books mentioned above cover a lot of what was done during the first 20 years of this century, but there are others. For developments in the early '20s, an especially exciting time, try Radio Telephony for Amateurs by Stuart Ballantine (Phila., David McKay, 1923). Others are Radio Communication by J. H. Morecroft (2nd ed., New York: Wiley, 1934), Vintage Radio 1887-1929 by Morgan McMahon (3rd ed., Vintage Radio, Rolling Hills Estates, CA, 1981; from Antique Electronic Supply, Antique Radio Classified, or Vestal Press) and the ARRL's Two Hundred Meters and Down by Clinton B. DeSoto (1936, 1981) and Fifty Years of ARRL (1965) (both still available from the ARRL), to name a few. Read any that you can get hold of and relive the exciting days of "wireless."

(Continued from p. 49) Anthony R. **Taddeo**, NY, Taddeo Loudspeaker Co.; Laura **Tek**, TN, CBS-NY; Thomas T. **Teruya**, KH6BM, HI; Paul J. **Thompson**, CO; George R. **Trapp**, CT, Leeds & Northrup; George A. **Valdes**, PA, Philco; Edward M. **Ware**, Bermuda, VP9LL, aviation engineer; Richard **Weil**, NY; Robert M. **West**, MI; Joseph B. **Westbrook**, APO AE; Arthur G. **Weyrich**, IL; Bill **White**, MD; Jim **White**, KY; J. Ritchie **Williamson**, NE; John Robert **Wilson**, AZ, Perham Foundation; James B. **Wright**, KB2NQL, NY; Fred **Wuensche**, TX; Carl **Youngs**, W3NWS, PA; Ralph **Zarra**, NY, armed forces radio op.; Jerome F. Zobel, CA; Tino **Zottola**, VE2GCE, QU *(thanks to Joyce Peckham)*.

HISTORICAL ARTIFACTS

Old-time ads are free to members collecting and restoring equipment for personal use. **The rules:** (1) one ad per issue per member; (2) include an SASE if acknowledgement is desired; (3) material must be over 25 years old and related to electronic communication; (4) give your full name, address, and ZIP code; (5) repeats require another notice - we aren't set up to repeat automatically; (6) the Association is not responsible for **any** transaction; (7) we retain the right to reduce the size of the ad if over seven lines; (8) AWA does not accept commercial advertising; (9) deadline for ads in the October issue is September 1; those received later will be held for the following issue. Mail **all** ads to: **Richard Ransley, Box 41, Sodus, NY 14551.**

FOR SALE/TRADE

Williamson amps. All xfmrs and chokes for PP-parallel 100 W/chan, two-chan. (stereo) Williamson; 2 ea. of Thordarson 27C51, 27R09, 27S67 and 2 ea. UTC H-72. All are new MIL-T-27B TF4 units. SASE for full description. Acrosound TO-330, new in orig. carton, $60. Ralph Zekelman, 6485 Gross Road, Bloomington, IN 47401.

J-38 keys, U. S. Army, still in sealed army pouches. Will trade for other keys, bugs or paddles. John Rehak, N6HI, 4035 E. Lavender Lane, Phoenix, AZ 85044-4681, (602) 759-8019.

Bunnell "Acme" resonator, for Morse operators, exact repros. Hoods available in wine red, WU green, gray and natural (varnished), pedestals black with felt base and 4-ft cord. Hoods drilled for main-line or local sounder. $45 incl. UPS. No CODs. Jack Proefrock, K6QEQ, 20814 S. Hawaiian Ave, Lakewood, CA 90715.

Literature, catalogs, flyers, books, circuits - large collection, 1940-70. Parts for building receivers, xmtrs and kW linears. Send needs and SASE to F. Yonker, W2IBH, 1229 Inverary Place, State College, PA 16801, (814) 867-1400.

Johnson Viking Valiant, $175 FOB, $255 shipped; Hammarlund HQ-180C, $180 FOB, $205 shipped. Don Bishop, Box 4075, Overland Park, KS 66204-0075, (913) 381-4359.

Old-time radio shows on tape cassettes. Catalog listing nearly 5000 shows, by category and title, $2. Herbert Parsons,Jr., 5 Surrey Lane, Peabody, MA 01960.

Radio service test equipment, tubes, new & used parts, service data. Send SASE with your wants. F. Krantz, 100 Osage Ave., Somerdale, NJ 08083, (609) 783-0400.

Meissner Deluxe Signal Shifter in good op. cond. with 20-40-80 meter coils (20-80 bandspread, 40 general coverage) and manual. General-coverage 2.0-8.87 MHz available, $50 extra. H. Meyer, W6TDP, 30 Tobin Clark Drive, Hillsborough, CA 94010, (415) 349-2071.

Horn Speaker Notebook, 1991 Rev. G, 102 pages - Xerox update to notebooks printed in 1980-86. 100 changes made to 1st edition in 1980. Supplements and is a companion to Radio Horn Speaker Encyclopedia, over 450 horns pictured. $15.50 incl. shipping. Stoddard NMA-3A UHF field-strength meter, 100-400 MHz, S/N 17, $75; Emerson 558 port. radio, ivory case, $50; Magnavox 22" dia. bell only, $75; GR 213 tuning fork osc., 1925, $35; GR megohm bridge 544B, $40; tubes NIB, CX375, TS257, UX-874, Victor 10-V-10. Floyd Paul, 1545 Raymond Ave., Glendale, CA 91201, (818) 242-8961.

Westinghouse refrigerator radios (2), wkg. but cosmetic defects, still nice, $85 each. Ra-O-Tel coin-op radio, no coin box, untested, $100. Paperback copy of The Portable Radio in American Life, $24.95. Michael Schiffer, 2718 E. 10th St., Tucson, AZ 85716, (602) 325-3532.

Old plastic and wood radios, affordable. SASE for 50-item list. David S. (Sam) Cope, KC4HMK, 2111 Hillsboro Heights, Knoxville, TN 37920.

Stock certificates: John Baird TV Ltd. $55; Collins Radio, $10; Admiral Radio, $10; Sentinel Radio, $10; Western Union, $10; AT&T, $10; IRC, $10; Phillips Corp., $10. J. J. Papovich, 53 Magnolia Ave., Pitman, NJ 08071, (609) 582-8279.

Large **antique-radio collection** including AK breadboard and other AKs, Stromberg-Carlson 1A, General Electrics and others. All restored and wkg. Dennis Dreger,, Site 414 C6 RR No. 4, Courtenay, BC V9N 7J3, Canada, (604) 334-2981.

Navy ARC-5 receiver, 1.5-3 MHz - not rare but interesting; mint. Motorola "Dispatcher" VHF transceiver, motorcycle version, transistors plus CK-type miniature tubes & 2E24 final. SASE for details. Julian Jablin, W9IWI, 9124 N. Crawford, Skokie, IL 60076.

Riders Vol. I-XVI, $175; Beitman 1926-54, $25.

You pick up. Mike Tuggle, 6613 Jefferson Blvd., Frederick, MD 21702, (301) 371-9390.

Heathkit MP-10 power converter. Input 6 or 12 VDC, output 117 VAC, 175 watts continuous. With manual, $30 PPD. Ken Greenberg, 4858 Lee, Skokie, IL 60077, (708) 679-8641.

Knobs: Custom-molded plastic. Send knob to be duplicated plus $8 each for plastic, $12 each for imitation wood or Catalin. Custom-formed plastic dial lenses. Send old lens if possible, tracing of lens opening plus $15 each. L. W. Terrell, 7109 E. Arbor Ave., Mesa, AZ 85208, (602) 830-7849.

833A tube, new, as described in Feb. 92 OTB. Best offer over $85. Also have 860, 5C22 and 5560. Jerry Weiss, Box 533831, Orlando, FL 32853, (407) 896-7757.

Friden 130 electronic calculator, ca. 1960, working, w/5" CRT readout; National NC-300 receiver; coils and shields from Navy RAK-7 receiver, ca. 1944; Western Electric 14A "resistance" tubes; other tubes. Rex Hyle, WA9JWT, 3312 W. Vera Ave., Milwaukee, WI 53209.

Schematics: 1920-70 radio, ham, TV, electronic organs, test gear, Canadian, misc., $5 PPD. For quotes on manuals send SASE. "If I don't have it, you probably don't need it." Alton Bowman, 4172 East Ave., Canandaigua, NY 14424-9564.

TUBES! TUBES! TUBES! "New" old stock and pulls. All checked and guaranteed. Hundreds of types. For list and prices, send $1 and SASE to David Meadows, K4LDI, 2920 Shillingford Ct., Marietta, GA 30067.

Manuals for WW II mil. radio, ham books, misc. vintage radio pubs. Pan American radio power supply, model CDF-P, less relay and vibrator. Want *Radio News*, June 1934; mil. CW keys with "J" nos., BC-1335, FL-10 filter for BC-474, WW II aircraft radios, parts and accessories. Henry Engstrom, Box 5846, Santa Rosa, CA 95402.

Coils, Meissner 14-6590/92 and 14-3732; Stanwyck S-253 SW-BC osc & Sig Gen. #5-7; 6-and 10-push-button switch assy., all new; Rhodes potentiometer-voltmeter by Sens. Research, New Rochelle. Photo available; 1950 *C-D Capacitor* magazines. Ron Brokloff, Box 811, State College, PA 16804.

Thousands of **1920s-30s radio parts**, tubes and literature. Huge 40-page catalog, $2. Gary Schneider, 9511 Sunrise Blvd, #23, North Royalton, OH 44133.

SW-3 coils, orig. 14A and two orig. 36Rs, one orig. form, 2 repro forms; all 6 for $55 ppd. Large WW II British transmitter roller-coil plug-in, in orig. wood box. for xmtr T1083, 1.5-3.0 MHz, $30 ppd. Need schematic and/or descr. of Lafayette C-83 15-tube all-wave set. Please check your 1935-40 Wholesale Radio catalogs! Thanks. Rick Ferranti, WA6NCX, 254 Florence Ave., Arlington, MA 02174, (617) 646-6343.

Canadian Northern Electric R3, R4, R21, R24, R41, R50 peanut-tube receivers; Canadian Marconi R1, R1A, R6; Mercury Super Ten peanut-tube; Rogers batteryless with Kellogg-type tubes, horns, tubes, misc. Bill Bittner, 519 W. Burnside Rd., Victoria, BC V8Z 1M6, Canada, (604) 479-0808.

Antique radios, approx. 75 at auction, Saturday Aug. 29 at 5:30 PM (preview 3:30-5:30) at Peasey Auction Service, Madison, NY 13402. Incl. AK, Radiola 16, 18, 60; Federal Orthosonic, Freshman, Bosch, Thermiodyne, Majestic, Willard, HRO-7, Showers, British WW II tank radio, Hammarlund HQ-129X. SASE for additional info. W. Porter, 11 Chestnut St., Clinton, NY 13323.

WANTED

UTC LS-series transformers. Have for sale audio & electronics books, parts, WE mercury relays, bulbs, transformers, VR tubes, RCA tube amp. and misc. other audio items. SASE for list. Richard Robinson, 868 South Main St., Plantsville, CT 06479, fax (203) 294-1745.

Manuals or circuit diagrams for Simpson self-powered calibrator model 2600 and Capacohmeter model 383-A. Milton Kant, 508 Cypress Lane, Cherry Hill, NJ 08003. (609) 795-3569.

REL (Radio Eng. Labs.) coils or forms & matching socket. Socket is 3-3/4" OD; coil form is 2" OD, 4" high, with radial pins. Ref.: *QST*, Feb 1929, p. 69. Bill Fizette, K3ZJW, RD 1, Box 55, Henryville, PA 18332, (717) 629-0637.

Amplion Corp. Dragon Fly horn or Zenith Radio Glory horn. Speaker for National NC-300 receiver. F. W. Nichols, PO Box 37094, Phoenix, AZ 85069, (602) 864-9987.

Emerson chassis and speaker #409 or 410, from early '30s, approx. chassis size 7-3/4" x 4-½", very compact. Cash or trade. Call collect if you think you have it. For sale: back issues of *OTB* starting from 1976, Vol. 16-4 thru Vol. 31-3, in VG cond. Best offer. Herman Fothe, 10 Jackson St., Sloatsburg, NY 10974, (914) 753-2090.

Clegg Labs: alignment data for a 2 & 6 meter rcvr model B Interceptor made in 1963. Schematic or wiring diagram for Ameco model VFO-621, copy OK. Tad Drogoski, N3JZQ, 507 Coal Valley Road, Jefferson Boro, PA 15025-3703.

Schematic for a **Radiola III** or the resistance of the five input resistors. Also the type of tube used in Grebe Synchrophase rcvr. William Beckett, 6 Wax Myrtle Lane, Hilton Head, SC 29926.

Radiola II: operators manual, photocopy OK; early 20s portable battery sets such as Crosley 51P or 50P, Kodel, etc.; De Forest tubes and cans; brass-based tipped tubes for battery sets. Carl Steinberg, 5 Cannan Rd., Monsey, NY 10952, (914) 352-0701.

WW I spark aircraft transmitter SCR-65, or English or German equivalent. BC-15 receiver. Xmtr easily identifiable by "spiral tape" coil on side of cigar-box case. C. Bart Whitehouse, 3 Sunset Lane, Greenwood Village, CO 80121, (303) 781-4177.

6LQ6 (or 6JE6C), 6EW6 (2), 12BA6, 6JH8 tubes. C. W. Hargens, 1006 Preston Rd., Philadelphia, PA 19118, (215) 836-5889.

Reel-to-reel audio tape recorder - 1-7/8 & 3-3/4 IPS, simple and inexpensive, no stereo. Gerald Liccione, 118 Hiawatha Trail, Liverpool, NY 13088.

Display tubes for Heathkit GC-1005 digital clock. They are Sperry type SP-352 or EX-352. Jack A. Freeman, 2512 Sunnycrest Drive, Reidsville, NC 27320.

Battery-operated portable phono that runs 78 RPM and takes 4-6 D or C cells, prefer working. Edison Elect. Light Co. letters and envelopes 1880s-90s; light bulbs pre-1900 with unusual sockets, plaster or wood, must be in base of light bulb; old electric fans, 4-6 blades, wooden base with binding posts. Bill Hope, Box 780, Service Creek Rd #1, Aliquippa, PA 15001, (412) 375-1258.

Guithman U17 and U50 receivers, also Meissner 8- and 9-tube Scouts, dead ones OK. Willing to part with a Viking 1. Henry Mohr, W3NCX, 1005 Wyoming, Allentown, PA 18103.

Sony TC-755 reel-to-reel tape recorder or source for parts for same. Restorable Hallicrafters SX-28A receiver. Gaylord Ewing, PO Box 144, 19 E. Main St., Morris, NY 13808.

Copies of manuals for Lafayette HA-700, HA-800B, National RCE, Precision E-200-C, Realtone Globepacer, Heathkit T-2, T-3 signal tracers. Tom Provost, 19 Ivanhoe Drive, Robbinsville, NJ 08691, (609) 259-7634.

Coil forms, four-pin, 1-½" diameter, grooved; also any pin-number coil forms made by Octocoil (Shortwave and Television Laboratories). SASE for summer 1992 'For Sale' list. Parker Heinemann, W1YG, 87 Cove Rd., Lyme, CT 06371, (203) 434-7783.

Plastic radios (Catalin), Fada, Emerson, Motorola, Garod, Air King, etc. Top price paid. Anthony Scarfogliero, 13 Fourth St., Brooklyn, NY 11231, (718) 858-1231.

Pocket-sized radios (tube, transistor, or crystal) made in Japan or U. S., wkg. or not. Eric Wrobbel, 20802 Exhibit Court, Woodland Hills, CA 91367.

E. H. Scott radios, 1925-53, in any cond. Early Scotts were often copper-shielded; used names "World Record," "Scott Transformer," and "Selectone." Latter Scott radios and amps were chrome-plated. Scott literature also pursued. I am attempting to preserve the history of this company. John Meredith, 1792 Nemoke Trail, Haslett, MI 48840.

Any factory-made crystal set. Collection now at 256 pieces and seeking more. Please make offer with your price and if possible include photo. Many thanks! Erwin Macho, Ambrosweg 17/A/8, A-1230, Vienna, Austria.

Genuine Western Electric tubes; good used 264B/C and 205F (ST-shape). I need your help for my project to build a replica WE 46 amplifier. A good used WE 555 receiver. Have a WW II Japanese Navy ceramic-based UY-807 tube made by Toshiba. I am not sure whether it was used on a Zero fighter! Jun Yatsuyanagi, JH8SST/7, 1-7 Hinaimachi, Araya, Akita 010-16, Japan.

WW I military radio sets, original manuals, parts, etc. which have not been converted for ham use. Please advise of condition. Amauri Sirica, R. Manuel Gadelho No. 8, 03645 Sao Paulo, Brazil.

RME-69 or National NC-101X receiver, restorable. C. A. Newton, PO Box 708, Fairhope, AL 36533, (205) 990-8430.

Cathedral cabinets: AK 84, AK 92, AK 165, AK 206, AK 217, AK 558, Zenith 805, Fada 51, Northland. Must be VG to mint original cond. Don Houde, 1000 Ashland Ave., Apt. 2, St. Paul, MN 55071, (612) 459-9135.

Old books, magazines, handbooks, *White's Radio Log*, first callbooks, old writings on radio, issues of *Radio* magazine. I pay shipping. Please don't throw them away. Call, write or fax. Donald Boland, N1FYX, 28 Faulkner St., Malden, MA 02148, (617) 324-5362, fax (617) 322-8412.

Small adjustment knob, below tuning knob, for AK 44; 10FP4 picture tube or method for reattaching base to glass (some leads are broken flush with the glass). Have for sale Patterson PR-15 general-coverage receiver. Ron Zammit, 469 Campana, Arroyo Grande, CA 93420.

Circuit diagrams for Crosley 52 and RFL 75; Cleartone TDA-55; Ozarka S-1; Arborphone 27; Pfanstiehl 7; Thorola 51; Eagle Type B; Empire Sealed 5; Gilfillan GN-5; Globe 770; Thompson S-60, Valleytone 52 and Qualitone Type DR. Robert Stapleford, 1800 Randolph, Topeka, KS 66604.

Help! Need **oscillator and final plate coils** for Hallicrafters HT-6. If you won't part with yours, I would appreciate construction data so I can restore this classic. Thanks! R. Haworth, W2PUA, 112 Tilford Road, Somerdale, NJ 08083, (609) 783-4175.

WE Steiner key. Japanese Hi-Mound/Swallow pump (hand) keys. David I. Combs, W5VJW, 2000 Victory Ave., Wichita Falls, TX 76301, (817) 767-0077.

Marconiphone type A2 amplifier, British crystal sets. I will pay top prices, serious collector not looking for bargains. Ian Sanders, 16725 Wild Oak Way, Morgan Hill, CA 95037, (408) 778-7547.

Zenith 6-volt radio model 6B107 or 4B106. Mallory vibrator puller model VP-1 or similar item. George Bonanno, 34 Charles St., Clifton, NJ 07013, (201) 746-5953.

Philco auto radio PA-1535 compatible with 1938 Packard. Arlo Brakel, 201 Deer Meadow, Gahanna, OH 43230, (614) 224-8606.

Citizens Radio Callbook mag. for 1920-25. Dept. of Commerce "Amateur Radio Stations of the U. S." 1920-27, and "Commercial and Government Radio Stations of the U. S." for 1920-28. *Radio Amateur Callbook* mag. (flying-horse cover) 1925, 1926, 1935, 1936. *Consolidated Radio Callbook* mag. for 1920-24. *Amateur Radio Callbook* by Radio Directory and Publishing Co. for 1920-25. Bob Arrowsmith, W4JNN, PO Box 166, Annandale, VA 22003, (703) 560-7161 collect.

Mac-Keys and McElroy memorabilia. Will be at the Artifax Books flea-market table at the Rochester meet. Tom French, W1IMQ, "The McElroy Collector," 120 Great Road, Maynard, MA 01754, (508) 897-2226.

Heathkit CR-1 crystal set & manual. Jim Penland, 144 Shoe Lane, Newport News, VA 23606, (804) 596-3776.

GE World Monitor radio model 7-2990A. Please advise price and cond. Jack A. Freeman, 2512 Sunnycrest Dr., Reidsville, NC 27320, (919) 349-6656.

Knight Spanmaster II shortwave receiver (ca. 1970) or just manual/schematic for same. Manual for Polycomm 6 transceiver. *Electronics Illustrated*, June 1961; *Electronics World*, Aug., Oct. 1959; Oct., Dec. 1961; *Radio-Craft*, May 1944; Oct., Nov. 1945; Sept. 1947; *Radio News*, Jan 1948; Aug. 1958; *Radio-Electronics*, Jan. 1955, Nov. 1960, Aug. 1962, Aug. 1963. Alvin Bernard, PO Box 690098, Orlando, FL 32819,(407) 351-5536.

QST **before 1928** with front & back covers. Ed White, WA3BZT, 809 Seymour Rd., Bear, DE 19701-1121.

General Radio banana plugs, 50 to 100, for breadboard transmitter project coils. Standard size as used on commercial coils made for ham rigs. 6-32 threaded hole or stud is OK. If stud, min. length 7/16". Harry Wells, AA6PP, 8538 Serapis, Pico-Rivera, CA 90660, (310) 942-2617.

Escutcheon (half-round shape) for AK 84 or 84B. Call collect. Knox Lee, 630 Shadowbrook Dr., Columbia, SC 29210, (803) 772-6593.

Collins 32V-3 AM transmitter. Fenton Wood, 109 Shoreline Dr., Star Harbor, Malakoff, TX 75148.

National crystal filter and knobs for 183D; dial covers for 183; S-meter, bar knobs, 456-kHz crystal and power supply (2.5-V fil.) for '35 HRO. Rob West, 27490 Strathmoor, Warren, MI 48092-3040,(313) 751-7271.

RME-69 and RME-99 receivers, clean, complete, unaltered and working, with manual. Martin Piepenburg, RR 1, Box 56B, Monterey, IN 46960, (219) 542-2591.

German, Italian, Japanese wartime radio equipment, whole or in part. Old aircraft and boat SW eqpt or manuals. Hugh Miller, KA7LXY, 6400 Maltby, Woodinville, WA 98072-8375.

Help! **Schematic and parts list** for a Zenith table radio (5A02) 5-tube 2-band 550-1700 kHz, 5.5-20 MHz. Tube complement 117Z6, 3Q5, 1H5, 1N5 and ?. Rudy Skaritka, W9KYA, 3925 Ryan Ave., Kingman, AZ 86401.

Phonograph motor model RC10 made by Bodine Electric Co. of Chicago, for "Eveready" model 50 combination. Just the basic motor w/o turntable or mounting plate will do. Peter Denman, RR 4, Arthur, Ont., Canada N0G 1A0, (519) 848-2711.

De Forest D-7 face & chassis only, already have coils, cabinet & antenna. George Potter, 2069 Sienna Trail, Lewisville, TX 75067, (214) 315-2553.

Marconi multiple tuner, as on p. 149 Practical Wireless Telegraphy by E. Bucher. John V. Smith, W4ACG, 1924 Dolphin Blvd., St. Petersburg, FL 33707.

Airline chassis 62-101; dial for Kolster 6D or 20; speaker for Philco 70/90; dial for Zenith porthole TV; pushbutton assembly for Zenith 9S365 or info on it. Keith Park, 795 Grooms Rd., Roxford, NY 12148, (518) 373-0417.

Navy crystal detector with SE nameplate, such as Lowenstein, preferably single or double. Alan Douglas, Box 225, Pocasset, MA 02559.

AN/ARC-5 transmitters: T-15, T-16, T-17, or T-18/ARC-5 (the medium-frequency Navy models). Orig. cond. or hacked-up. Ludwell Sibley, KB2EVN, 44 E. Main St., Flemington, NJ 08822, (908) 782-4894.

AND BOOK MAGAZINE REVIEWS

Edited by Bruce Kelley

THE COLLECTOR'S GUIDE TO ANTIQUE RADIOS

By Marty and Sue Bunis

2nd ed., 216 pp., 8-½ x 11 format, soft cover. Available from ARC (address in the "In House "column), or Marty Bunis, RR 1, Box 36, Bradford, NH 03221, or Collector Books, PO Box 3009, Paducah, KY 42002-3009 ($17.95 + $2.00 postage & handling).

With its 7000-receiver listing, this book is a complement to The Radio/TV Finder (reviewed below). It covers most broadcast receivers from the early '20s into the '50s. The big difference is that a current dollar value is estimated for each set. In addition, an average of four color pictures on each page enables the collector to recognize various styles and makes. I was impressed the quality and quantity of the photographs. The authors' knowledge of the sets prized by collectors is evidenced by the high dollar value assigned to some AKs, Federals and Catalins.

I highly recommend this book to anyone collecting broadcast receivers. It will be an important reference in the AWA Museum Library. *[BK]*

THE RADIO/TV FINDER

By John Okolowicz

92 pp., large, soft cover. Available from Antique Electronic Supply.

An index of nearly 7000 pictures of collectible radios and TVs in 24 popular books. Given the name and model one can determine the year, picture location in other references, style, cost, etc. An incredible index for the collector. *[BK]*

BERLIN CALLING

By John Carver Edwards

240 pp., hardcover, $21.95, ISBN 0-27593-05-7, Praeger Pub. Co., One Madison Ave., NY, NY 10010.

An absorbing, well-documented report on propaganda broadcast to American listeners and soldiers by Americans who deserted to the Third Reich during WW II. Not interesting? Obtain a copy and you'll read it from cover to cover. *[BK]*

RADIO AND TELEVISION PIONEERS A PATENT BIBLIOGRAPHY

By David Kraeuter

329 pp., hardcover, $35. ISBN 0-810825-56-2, Scarecrow Press, Inc., Box 4167, Metuchen, NJ 08840.

This is a book for the radio historian and technical-commercial writer. The author, editor of the Pittsburgh Antique Radio Society *Oscillator*, covers each U. S. patent of 40 radio and television pioneers, Alexanderson through Zworykin, in chronological order from the nineteenth century through 1978. The material is related to patent listings on this subject in the AWA Review, Vols. 5 and 6. *[BK/LAS]*

KMA RADIO - THE FIRST SIXTY YEARS

By Robert Birkby

248 pp., soft cover, ISBN 0-961508-30-2, Barnhart Press, Omaha, NB.

The story of a typical, well run broadcast station from 1925 to 1985. Good reading for the broadcast listener-historian, for it brings back memories of broadcasting originating in a small room to modern network programming. Your own local station may have a similar history. *[BK]*

RADIO ART

By Robert Hawes (Editor, BVWS *Bulletin*)

128 pp., 9 x 12 format, hardcover, ISBN 1-872532-29-2, Green Wood Pub., London. $29.95 from Antique Electronic Supply.

It is difficult to describe this book other than to say it's the ultimate in professional color photography - about two superb photos per page - applied to the design of radio receivers as art. The author starts with a brief history of wireless technology and radio design, and then engulfs us with page after page of receivers of all styles, mainly British classics, rendered in vivid, sharp color. There is a charming page on the Théâtrophone, our OTB cover subject. The relationship of radio design to the user's habitat - "radio enters the home" - is spelled out thoughtfully. Scott collectors will enjoy the full-page photo on p. 38. Interesting aberrations in design are included - like the 85-foot-high French replica radio displayed in Paris in 1990, or the Autel brass-marble "priest's radio," or the Roberts mink-covered portable. Coverage of the Loewe OE333 one-tube set is particularly fine. German and Italian fascist "people's" sets are included, as are some Catalins. Great stuff, knowledgeably analyzed and presented. *[BK/LAS]*

"WIRELESS TRADER"

A new, biweekly advertising source is now available for antique radios and associated material. The "Wireless Trader" contains want-ads and display advertising. The initial issue amounted to six pages in 8-½ x 11 format, nicely produced and printed, along the lines of the amateur-radio "Yellow Sheets" but formatted better. There is no attempt at features or columns, as with A. R. C. The subscription rate is $16.95 per year (24 issues), with first-class mailing, from Trader Publications, 4290 Bells Ferry Rd., Suite 106-36, Kennesaw, GA 30144. *[LAS]*

GUIDA DEL RADIOCOLLECTIONISTA

By Enrico Tedeschi

143 pp., 8-½" x 12" xerocopied format, $20 U. S. postpaid (checks OK), from the author at Via Acilia 242, casella postale 10, 00125 Rome, Italy.

This is a scrapbook sort of production, in Italian, by the owner of the Museo della Radiofonia (see last August's *OTB*, p. 55). As a "Guide for the Radio Collector," it is a rather comprehensive sourcebook on the "art" of collecting: getting started; specializing versus collecting broadly; a far-reaching review, with sample pages, of literature currently available in the American, British, German, and Italian press. Comparable text covers books on the historical aspects of radio communication. There is coverage of the larger collector/historical clubs worldwide. Focusing on Italian radios, there is a "yellow pages" section with a listing (excerpted from the Italian equivalent of Rider's, ca. 1952) of several hundred models by such makers as A B C Radiocostruzioni, Ducati Elettrotecnica, Geloso, Kosmovox, Magnadyne, Radiomarelli, S. I. A. R. E. Crosley Fada (!), and Unda. A chapter covers collecting transistor sets. Looking to the acquisition of equipment via the mainstream antiques market, there is a chapter on such markets and publications in Italy. Another covers basic test equipment and troubleshooting/restoration techniques, including literature on tube equivalents.

Yet another chapter covers English and Italian museums of interest. Guglielmo Marconi receives, not surprisingly, extensive coverage with a biliography, information on postage stamps, etc. Returning to the theme of cataloguing books on collecting, there is a (somewhat uneven) bibliography of about 270 entries worldwide, including such American authors as Floyd Paul, Morgan McMahon, and Gerald Tyne; but curiously omitting Alan Douglas.

This book sweeps across a huge amount of information. It is a useful survey of a hobby that becomes harder to categorize each year. [LAS]

BRASS BUTTON BROADCASTERS - A LIGHTHEARTED LOOK AT FIFTY YEARS OF MILITARY BROADCASTING

By Trent Christman

Turner Publishing Co., P.O. Box 3101, Paducah, KY 42002-3101, 208 pp., hardback, $39.95

1992 is a banner year for broadcasting retrospectives. In January we were treated to Tom Lewis' book Empire of the Air being turned into a superb TV documentary chronicling the heady early days of American broadcasting and its larger-than-life pioneers Armstrong, de Forest, and Sarnoff. This more recent publication coincides with the 50th anniversary of the Armed Forces Radio and Television Service, the organization responsible for bringing programming to U. S. troops all over the world.

Veteran broadcaster Trent Christman has drawn on his 28-year service with AFRTS, as well as the accounts of over 300 present and former "brass button broadcasters," to celebrate the golden jubilee of what has become the world's largest broadcasting organization, operating facilities wherever there is a U. S. military presence - currently in 130 countries and on all the world's oceans.

Some of the most fascinating chapters describe how Washington recruited a brilliant team of professionals in WW II to plan, organize and string together - often in combat zones - such colorful affiliations as the Mosquito, Jungle, and Desert Networks.

Engineers and technicians may wish the author had described in more detail the problems in building a worldwide system of transmitters, communication links, and broadcast facilities. Christman, however, had a lot of ground to cover and probably felt that a technical history of military broadcasting was best left to someone else, hopefully drawing on the memoirs of Jack Boor, Walt Cleary, and other AFRTS engineers. Still, much space is devoted to technological advances over the years, the advent of television, and the touchy questions of host-country agreements over frequencies, signal strength, and program content. (Britain in WW II and Saudi Arabia in "Desert Storm" presented the most problems in the latter regard.) Also covered is GI ingenuity in rigging homebrew sets with whatever was at hand - razor blades as detectors, and mess kits to house three-tube battery receivers.

It is a tribute to AFRTS pioneers, notably John Hayes, that they chartered a broadcasting service which to this day has remained relatively free from censorship (except for reasons of security), bias, and manipulation by parent military commands. Christman says this wasn't always easy, especially in the '60s and '70s, when the Pentagon and local commanders tried to inject "managed news" and ideology into military broadcasts.

AFRTS has a history of being arguably the most cost-effective organization in the military. That's because commercial broadcasters have contributed the "results of their labors at near cost, or less, in order that the troops may enjoy the same programming as their contemporaries at home." Especially during wartime, all the talent of show business was donated practically for free to shows like "Command Performance" and "Mail Call." Today, servicemen and women are able to view of 90% of the top-rated American TV shows purchased by AFRTS at a fraction of standard industry rates.

Because of this generosity and availability of talent, programming has always been of high quality and rich diversity. So it should come as no sur-

prise that AFRTS has remained steadfastly popular with its audiences. "Poll after poll," writes Christman, "has shown that the soldier, sailor, Marine and airman consider AFRTS, along with mail from home, to be that most important single morale factor while serving overseas." In view of the vital role it has thus played over the years, it is difficult to understand why AFRTS is scarcely mentioned in any of the books dealing with World War II or any subsequent military involvement abroad. Christman has helped fill that void with a commemorative book that should belong in the collection of any student of broadcasting history. *[Reviewed by Ben Mast, long-time broadcaster, editor, and writer; with AFTRS and civilian organizations.]*

Not seen yet but available - description adapted from publisher's material:

ALEXANDERSON PIONEER IN AMERICAN ELECTRICAL ENGINEERING

By James E. Brittain

374 pp., 13 photos, 7 drawings; ISBN 0-801842-28-X, $45.00. *Johns Hopkins Studies in the History of Technology.*

Ernst F. W. Alexanderson came to the U.S. from Sweden in 1901. A prolific inventor in the fields of radio, television, power transmission, electric railways, radar and computers, he secured more than 340 U.S. patents - the last one in 1973, at the age of 95. Now, AWA member Brittain provides the first biography of one of the premier engineer-inventors of the twentieth century.

Alexanderson serves as a case study in the history and sociology of twentieth-century technology. Brittain treats themes that remain of strong interest today, including the issue of creativity in a corporate setting, the distinctions between science and engineering, the importance of corporate style and culture, and the role of the military in bringing about technological change. This revealing and informative biography chronicles the career of a leading figure in the development of technology during the first half of the century.

The author teaches in the School of History, Technology, and Society at Georgia Tech. He is editor of Turning Points in American Electrical History and coauthor of Engineering the New South. [*Information from Bill Byron, W7DHD*]

Also not seen but intriguing; translated from the publisher's material:

HISTOIRE DU TUBE ELECTRONIQUE - GUIDE DU COLLECTIONNEUR

By Bernard Machard

2nd. ed., 430 pp., 250 F plus 22 F postage, from M. B. Machard, Chemin des Crozes, Vers-Pont du Gard, 30 210 Remoulins, France.

Entirely reviewed and corrected, considerably augmented: thyratrons, disc-seal types, pencil tubes, TR and ATR types, emission, ion gauges, photomultipliers, vidicons, nuvistors, Nixies, klystrons, magnetrons, compactrons, etc., tube bases, cross-references of VT, CV, and civilian types and also between tubes. More than 1300 types described. [*The accompanying drawings depict such items as the 7735 vidicon, 2K28 and 2K59 klystrons, Marconi Catkin, and a Fifties subminiature. Thanks to Joyce Peckham for source material. LAS*]

MUSEUM NEWS

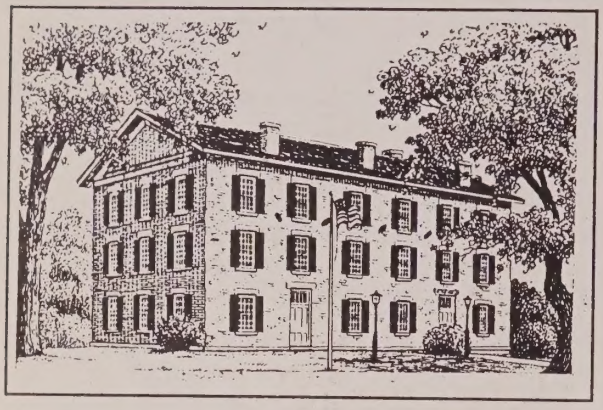
PAVEK MUSEUM NEWS

The Pavek Museum of Broadcasting is highly active in events in the Minneapolis area dealing with radio and radio history: special auction sales, the annual Radio Workshop, amateur-radio license classes, etc. On May 29th it hosted a special visit in connection with the Northland Antique Radio Club's "Radio Daze '92." An event in June was "KLBB Night" with local radio personalities. Besides its regular schedule of displays, the Museum invites "sponsor" membership at affordable rates, and produces a good newsletter with stories on Minnesota radio history. The Museum is at 3515-17 Raleigh Ave., PO Box 16030, St. Louis Park, MN 55416-0030, (612) 926-8198. Hours: Tuesday-Friday, 10 AM - 6 PM; Saturdays 9 AM - 5 PM; except holidays. The amateur-radio collection has received some classic Collins equipment (KWM-2, 30L-1, SM-1). For more on the museum's displays, see p. 46 of the Oct. 1991 *OTB*.

PERHAM FOUNDATION MUSEUM PROGRESS

There is some progress to report on the Perham Foundation (ex-Foothill) Museum in California: the Foundation and the City of San Jose are working to reinstate the museum in San Jose's Kelly Historical Park. The park has several turn-of-the century structures, with antique streetcars, an old hotel and bank, and even a copy of San Jose's Chinese temple ca. 1890. It emphasizes the period 1900-20. This is a good "fit" for the Museum in that SJN, the "San Jose Calling" radio station; and Lee de Forest, whose bust and Audions the Museum has, did developmental work for the Federal Telegraph Company in Palo Alto in 1912. The Museum's huge Federal arc converter is of this vintage. The new Museum will bring displays of electronic technology into the time of Silicon Valley. Of course, the deal isn't done until it's done . . . [*news courtesy of Bart Lee*]

THE MUSEUM



AWA ELECTRONIC COMMUNICATION MUSEUM

Location: Village Green, Rtes. 5 & 20, Bloomfield, New York
Hours: May 1 through October 31: Sunday, 2-5 PM; June 1 - August 31: Saturday, 2-4 PM; Wednesday, 7-9 PM. (Closed Holidays)
Group tours by appointment: 716-657-7489
Museum telephone: 716-657-6260
Amateur Station: W2AN
FREE ADMISSION

(For this quarter's Museum activities, see "AWA News" inside.)

In the AWA Museum: 1923-24 amateur station 2AN. Left center is the 160-200 meter phone transmitter with UV-203 in final, Heising-modulated by another 203, UV-201 speech amp with single-button carbon mike. Immediately below is the power supply consisting of a series of chemical-rectifier jars. Grebe, de Forest and Zenith receivers at right. Note early QSLs without the "W" prefix. From the bottom row, "8BGN" (W2BGN) and "2CQZ" (W2LV) are active in AWA today.

Not in the AWA Museum, but 500 miles west: Don Johnston of the Indiana Historical Radio Society and a WW I friend, showing a nice Federal receiver and other parts of Don's collection. See Larry Babcock's article on the IHRS Spring Meet for details.